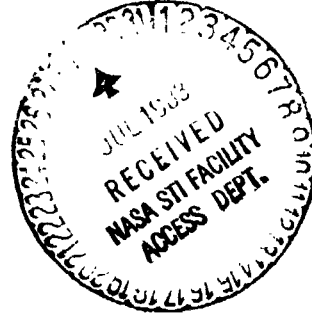


# NASA TECHNICAL MEMORANDUM



NASA TM-82529

## ATMOSPHERIC ENVIRONMENT FOR SPACE SHUTTLE (STS-6) LAUNCH

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16. ABSTRACT  This report presents a summary of selected atmospheric conditions observed near Space Shuttle STS-6 launch time on April 4, 1983, at Kennedy Space Center, Florida. Values of ambient pressure, temperature, moisture, ground winds, visual observations (cloud), and winds aloft are included. The sequence of prelaunch Jimsphere measured vertical wind profiles is given in this report. Also presented are the wind and thermodynamic parameters measured at the surface and aloft in the SRB descent/impact ocean area. Final meteorological tapes, which consist of wind and thermodynamic parameters versus altitude, for STS-6 vehicle ascent and SRB descent have been constructed. The STS-6 ascent meteorological data tape has been constructed by Marshall Space Flight Center in response to Shuttle task agreement No. 936-53-22-368 with Johnson Space Center.			
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## TECHNICAL MEMORANDUM

### ATMOSPHERIC ENVIRONMENT FOR SPACE SHUTTLE (STS-6) LAUNCH

#### I. INTRODUCTION

This report presents an evaluation of the atmospheric environmental data taken during the launch of the Space Shuttle/STS-6 vehicle. This Space Shuttle vehicle was launched from Pad 39A at Kennedy Space Center (KSC), Florida, on a bearing of 90 deg east of north at 1830 UT (1330 EST) on April 4, 1983.

This report presents a summary of the atmospheric environment at launch time (L+0) of the STS-6, together with the sequence of prelaunch Jimsphere measured winds and profiles from L-14 hr through liftoff. The general weather situation for the launch and flight area is described, and surface and upper level wind/thermodynamic observations near launch time are given. Surface and upper level wind/thermodynamic parameter measurements are also presented for the SRB descent/impact analyses.

Previous MSFC-related launch vehicle atmospheric environmental conditions have been published as Appendix A of individual MSFC Saturn Flight Evaluation Working Group reports [1]. Office memorandums have been issued for previous flights giving launch pad wind information. A report has also been published [2] which summarizes most launch atmospheric conditions observed for the past 155 MSFC/ABMA-related vehicle launches through SA-208 (Skylab 4). Reports summarizing ASTP, STS-1, STS-2, STS-3, STS-4, and STS-5 launch conditions are presented in References 3, 4, 5, 6, 7, and 8, respectively.

#### II. SOURCES OF DATA

Atmospheric observational data used in this report were taken from synoptic maps made by the National Weather Service, plus all available surface observations and measurements from around the launch area. Upper air observations were taken from balloon-released instruments sent aloft from Cape Canaveral Air Force Station (CCAFS) and from the ship Redstone in the Atlantic Ocean off the Florida Coast. High-altitude winds and thermodynamic data were measured by the Super-Loki rocketsondes launched from the CCAFS. Table 1 presents a listing of systems used to obtain the upper level wind profiles used in compiling the final ascent meteorological data tape. Only the ship-launched Omegasonde-Rawinsonde and Super-Loki rocket data were used in the upper level atmospheric regions for the construction of the final SRB descent/impact meteorological data tape. Data cutoff altitudes are also given in Table 1.

#### III. GENERAL SYNOPTIC SITUATION AT LAUNCH TIME

High pressure, centered along the South Carolina coast, was the atmospheric influence over the Florida peninsula during the countdown and launch of STS-6. Along the peninsula, surface winds were generally from the east or northeast with magnitudes less than 10 knots.

Very little cloud cover was present, along with low humidity and warm temperatures (low 70's) prevailing throughout the morning countdown period. Figure 1 presents the surface synoptic map 6 hr 30 min prior to launch. Figure 2 presents the wind flow aloft at the 500 mb level. Westerly winds dominated the flow aloft over the KSC Florida area.

Cloudiness was not very prevalent over the northern or central Florida peninsula or the KSC launch complex as shown in Figure 3. Figure 3 presents the GOES-5 visible picture taken seconds after launch (1830 UT). Scattered cumulus clouds at 3500 ft along with scattered cirrus at 250,000 ft were present during launch. Figure 4 shows an up-close visible shot of the KSC coastline as recorded by GOES-5, taken at 1830 UT. Most clouds were inland, west of the KSC launch complex.

#### **IV. SURFACE OBSERVATIONS AT LAUNCH TIME**

Surface observations at launch time for selected KSC locations are given in Table 2. Included are pad 39A, Shuttle runway, and CCAFS balloon release station observations. Neither precipitation nor lightning was observed at launch time.

Table 3 presents Pad 39A wind data along with other standard hourly meteorological measurements and sky observations for the 6-hr period prior to launch of STS-6. Values for wind speed and direction are given for the 84 m (275 ft) FSS reference level and 18 m (60 ft) pad light pole level.

#### **V. UPPER AIR MEASUREMENTS DURING LAUNCH**

The FPS-16 Jimsphere (1845 UT), MSS rawinsonde (1834 UT), Super-Loki rocketsonde (2130 UT), and Super-Loki Robin (1930 UT) systems were used to measure the upper level wind and thermodynamic parameters for STS-6 launch. At altitudes above the rocket-measured data, the Global Reference Atmosphere (GRA) [9] parameters for April KSC conditions were used. A tabulation of the STS-6 final meteorological data for ascent is presented in Table 4 which lists the wind and thermodynamic parameters versus altitude. A brief summary of parameters is given in the following paragraphs.

##### **A. Wind Speed**

At launch time, winds speeds were 12.7 ft/sec (7.5 kn) at 60 ft and increased to a maximum of 155 ft/sec (92 kn) blowing from 277 deg. This maximum occurred at an altitude of 46,100 ft (14,051 m). The winds decreased above this level and then became stronger again at much higher levels, as shown in Figure 5. The overall maximum measured speed was 168 ft/sec (99 kn) at 268,000 ft (81,686 m) altitude.

##### **B. Wind Direction**

At launch time, the 60-ft wind direction was from the northeast (63 deg) and shifted through the south to a westerly component just below 10,000 ft (3048 m). The winds remained essentially westerly above this level. Figure 5 shows the complete wind direction versus altitude profile. As shown in Figure 5, wind directions became quite variable at altitudes with low wind speeds.

### **C. Prelaunch/Launch Wind Profiles**

Prelaunch/launch wind profiles presented in Figures 6 through 9 were measured by the Jimsphere FPS-16 system. Data are shown for five measurement periods beginning at L-14 hr and extending through L+0.

The wind speed and direction profiles for the 14-hr period prior to and including L+0 are shown in Figures 6 and 7. The in-plane (right crosswind) and out-of-plane (left crosswind) profiles are given on Figures 8 and 9. The wind speeds and component speeds were not significantly different from the April mean values in the 30,000 to 40,000 ft layer during the period for which data are shown. An unusually strong right crosswind (~165 fps at 37,000 ft) which was measured at L-28 hr, subsided and was not present in the later observations presented on Figure 8.

### **D. Thermodynamic Data**

The thermodynamic data taken at STS-6 launch time, consisting of atmospheric temperature, dew-point temperature, pressure, and density have been compiled as the STS-6 ascent meteorological data and are presented in Table 4. The associated thermodynamic data taken in support of the SRB descent have also been assembled as the STS-6 SRB descent/impact meteorological data and are presented in Table 5. The vertical structure of temperature for the STS-6 ascent and for the SRB descent is shown graphically versus altitude in Figure 10.

The atmospheric thermodynamic parameters of temperature, pressure, and density, measured during STS-6 launch below 233,000 ft, were generally within 4 percent of their respective PRA-63 [10] annual values. All these parameters stayed within 26 percent of their respective PRA-63 values, at all levels.

### **E. SRB Upper Air and Surface Measurements**

As has been mentioned in earlier paragraphs, an SRB descent meteorological data tape has also been constructed which consists of data taken from the Omegasonde-Rawinsonde system (1900 UT) aboard the USNS Redstone, which was stationed off the coast in the Atlantic Ocean. The CCAFS measured Super-Loki rocketsonde data and the GRA model data were used at altitude levels above the measured Omegasonde data. The tabular values for the SRB descent meteorological tape are presented in Table 5, with wind speed and direction profiles presented in Figure 11. Figure 10 gives the vertical temperature profile.

The surface-ship meteorological and oceanographic observations taken close to STS-6 SRB impact are presented in Table 6.

## **VI. SUMMARY OF ATMOSPHERIC CONDITIONS FOR STS LAUNCHES**

Given in Table 7 are selected atmospheric L+0 launch conditions for all the Space Shuttle launches.

TABLE 1. SYSTEMS USED TO MEASURE UPPER AIR WIND DATA FOR STS-6 ASCENT\*

Type of Data	Date: April 4, 1983		Portion of Data Used			
	Release Time		Start		End	
	Time (UT) (hr:min)	Time After T+0 (min)	Altitude m (ft)	Time After T+0 (min)	Altitude m (ft)	Time After T+0 (min)
FPS-16 Jimsphere	18:45	15	6 (21)	15	17,069 (56,000)	71
MSS Rawinsonde	18:34	4	17,374 (57,000)	61	27,127 (89,000)	93
Super-Loki Rocketsonde (Datasonde)	21:30	180	70,104 (230,000)	180	27,432 (90,000)	202
Super-Loki Rocketsonde (Robin)	19:30	60	85,344 (280,000)	60	70,409 (231,000)	61
Omegasonde-Rawinsonde*	19:00	30	9 (28)	30	24,384 (80,000)	110

\*The Omegasonde-Rawinsonde was released from the USNS Redstone to measure the upper atmosphere for SRB descent/impact analyses.

TABLE 2. SURFACE OBSERVATIONS AT STS-6 LAUNCH TIME

Location <sup>a</sup>	Time After L+0 (min)	Pressure (MSL) N/cm <sup>2</sup> (psia)	Temperature °K (°F)	Dew Point °K (°F)	Relative Humidity (%)	Visibility km (miles)	Sky Cover			Wind	
							Cloud*** Amount (Tenths)	Cloud Type	Height of Base Meters (ft)	Speed ft/sec (kt)	Direction (deg)
NASA Space Shuttle Runway <sup>e</sup>	0	10.190 (14.780)	297.0 (75.0)	288.7 (60.0)	60	16 (10)	2	Cumulus	1067 (3,500)	13.5 (8.0)	050
Winds Measured at 10.4 m (34 ft)							2	Cirrus	76,200 (250,000)		
CCAFS <sup>c</sup>	4	10.183** (14.769)	294.9 (71.2)	287.2 (57.2)	61	—	—	—	—	16.9 (10.0)	090
Surface Measurements											
Pad 39A Lightpole <sup>d</sup>	0	10.163* (14.740)	295.9 (73.0)	286.5 (56.0)	55	—	—	—	—	12.7 <sup>b</sup> (7.5)	063 <sup>b</sup>
SE 18.3 m (60.0 ft)											
Pad 39A FSS	0	—	—	—	—	—	—	—	—	16.4 <sup>b</sup> (9.7)	055 <sup>b</sup>
(Top-NW) 83.8 m (275 ft)											

\* Pad 39A Camera Site 3 barometric pressure instrument (~21 ft) appeared to be reading too low. Therefore, the KSC Shuttle runway station pressure value interpolated to 10.183 N/cm<sup>2</sup> at 21 ft above MSL would be more appropriate as the L+0 pad atmospheric pressure measurement.

\*\* Pressure at 16 ft station elevation.

\*\*\* Three-tenths total sky cover.

a. Altitudes of measurements are above natural grade, except where noted.

b. Approximately 1 min average prior to L+0.

c. Balloon release site.

d. Pad 39A thermodynamic measurements are taken at camera site No. 3, approximately 6.4 m (21 ft) above MSL.

e. Official STS-6 sky observational site.

TABLE 3. STS-6 PRE-LAUNCH THROUGH LAUNCH KSC PAD 39A METEOROLOGICAL MEASUREMENTS\*

Hourly Atmospheric Measurements										Sky Condition			
4 April 1983 Time UT	Temp. (°F)	Dew Point (°F)	RH (%)	275' Level (NW)**		60' Level (SE)**		Clouds	Total Sky Cover	Vis. (mi.)	Other Remarks		
				WS Kt	WD°	WS Kt	WD°						
1200	62	49	62	15	290	12	030	Clear	0/10	10	ORIGINAL RECORD OF POOR QUALITY		
1300	64	50	60	13	340	10	040	0/10 Ci at 250,000 ft	0/10	10			
1400	66	50	57	12	340	9	030	Clear	0/10	10			
1500	67	50	55	13	330	9	030	Clear	0/10	10			
1600	69	51	53	12	340	9	040	1/10 Ci at 250,000 ft	1/10	10			
1700	70	54	56	11	350	8	090	0/10 Cu at 3500 ft 1/10 Ci at 250,000 ft	1/10	10			
1800	72	54	54	10	010	7	070	0/10 Cu at 3500 ft 1/10 Ci at 250,000 ft	2/10	10			
L+0*** 1830	73	56	55	10	055	7	063	2/10 Cu at 3500 ft 2/10 Ci at 250,000 ft	3/10	10			

\* Hourly observations obtained verbally from CCAFS.

\*\* 10 min mean about the hour from pad 39A instrumentation.

\*\*\* L+0 PAD Wind and thermodynamic parameters obtained from HOSC strip charts. SE Anemometer used at 60 ft level, while NW anemometer used at 275 ft level for L+0 wind conditions (approximately 1 min average prior to L+0). Pad 39A L+0 atmospheric pressure, at 21 ft (MSL), was 10.183 N/cm<sup>2</sup>. Sea level pressure was 10.190 N/cm<sup>2</sup>.

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TABLE 4. STS-6 FINAL T+0 ASCENT METEOROLOGICAL DATA TAPE

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
000021	013	060	22.8	.1018+04	.1192+04	13.3
000100	015	070	22.4	.1015+04	.1190+04	13.2
000200	015	079	22.0	.1012+04	.1188+04	13.2
000300	016	077	21.5	.1008+04	.1185+04	13.1
000400	017	076	21.1	.1005+04	.1183+04	13.0
000500	009	089	20.6	.1001+04	.1180+04	13.0
000600	010	080	20.2	.9976+03	.1178+04	12.9
000700	016	088	19.7	.9941+03	.1176+04	12.8
000800	021	100	19.3	.9905+03	.1173+04	12.7
000900	020	113	18.8	.9870+03	.1171+04	12.7
001000	020	118	18.4	.9835+03	.1169+04	12.6
001100	018	122	18.2	.9800+03	.1165+04	12.4
001200	018	121	18.0	.9766+03	.1162+04	12.1
001300	019	128	17.8	.9731+03	.1159+04	11.9
001400	019	139	17.6	.9696+03	.1155+04	11.7
001500	016	140	17.5	.9662+03	.1152+04	11.5
001600	017	134	17.3	.9628+03	.1149+04	11.2
001700	017	132	17.1	.9594+03	.1146+04	11.0
001800	019	136	16.9	.9560+03	.1142+04	10.8
001900	016	146	16.7	.9526+03	.1139+04	10.5
002000	014	143	16.5	.9492+03	.1136+04	10.3
002100	016	138	16.3	.9458+03	.1133+04	10.3
002200	018	142	16.1	.9424+03	.1129+04	10.3
002300	019	147	15.9	.9390+03	.1126+04	10.3
002400	017	142	15.7	.9357+03	.1123+04	10.3
002500	020	136	15.5	.9323+03	.1119+04	10.3
002600	021	145	15.3	.9290+03	.1115+04	10.4
002700	020	155	15.1	.9257+03	.1113+04	10.4
002800	018	155	14.9	.9224+02	.1110+04	10.4
002900	019	153	14.7	.9191+03	.1107+04	10.4
003000	022	162	14.5	.9158+03	.1103+04	10.4
003100	024	168	14.3	.9125+03	.1100+04	10.4
003200	021	175	14.1	.9092+03	.1097+04	10.3
003300	017	172	13.8	.9059+03	.1094+04	10.5
003400	022	174	13.6	.9027+03	.1091+04	10.5
003500	022	188	13.4	.8994+03	.1088+04	10.6
003600	020	189	13.2	.8962+03	.1084+04	10.7
003700	018	191	13.0	.8930+03	.1081+04	10.7
003800	018	190	12.7	.8898+03	.1078+04	10.8
003900	019	195	12.5	.8866+03	.1075+04	10.8
004000	021	207	12.3	.8834+03	.1072+04	10.9
004100	019	211	12.3	.8802+03	.1069+04	9.3
004200	018	212	12.4	.8770+03	.1065+04	7.7
004300	017	209	12.4	.8738+03	.1061+04	6.2
004400	015	213	12.5	.8706+03	.1058+04	4.6
004500	017	228	12.5	.8675+03	.1054+04	3.0
004600	019	242	12.6	.8643+03	.1051+04	1.9
004700	020	249	12.6	.8612+03	.1047+04	-0.2
004800	020	257	12.7	.8581+03	.1043+04	-1.7
004900	020	252	12.7	.8550+03	.1040+04	-3.3

TABLE 4. (Continued)

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ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
005000	017	239	12.8	.8512+03	.1036+04	-9.2
005100	018	239	12.7	.8498+03	.1032+04	-5.0
005200	018	236	12.7	.8457+03	.1029+04	-5.2
005300	020	240	12.6	.8427+03	.1025+04	-5.3
005400	019	243	12.5	.8396+03	.1022+04	-5.5
005500	017	246	12.5	.8366+03	.1019+04	-5.6
005600	016	248	12.4	.8336+03	.1015+04	-5.8
005700	015	233	12.3	.8305+03	.1012+04	-5.9
005800	015	224	12.2	.8275+03	.1008+04	-6.1
005900	019	216	12.2	.8245+03	.1005+04	-6.2
006000	021	213	12.1	.8215+03	.1002+04	-6.4
006100	025	216	12.2	.8186+03	.9977+03	-6.4
006200	024	226	12.2	.8156+03	.9932+03	-6.5
006300	018	238	12.3	.8127+03	.9901+03	-6.5
006400	015	242	12.3	.8097+03	.9863+03	-6.6
006500	015	244	12.4	.8068+03	.9825+03	-6.6
006600	018	256	12.5	.8039+03	.9788+03	-6.6
006700	017	264	12.5	.8010+03	.9750+03	-6.7
006800	013	258	12.6	.7981+03	.9713+03	-6.7
006900	017	248	12.6	.7952+03	.9676+03	-6.8
007000	018	258	12.7	.7923+03	.9639+03	-6.8
007100	014	256	12.6	.7894+03	.9608+03	-6.9
007200	017	248	12.5	.7866+03	.9577+03	-7.0
007300	022	255	12.4	.7837+03	.9546+03	-7.1
007400	021	253	12.3	.7809+03	.9515+03	-7.2
007500	020	240	12.1	.7780+03	.9484+03	-7.3
007600	022	239	12.0	.7752+03	.9453+03	-7.5
007700	019	244	11.9	.7724+03	.9423+03	-7.6
007800	017	239	11.8	.7696+03	.9392+03	-7.7
007900	020	238	11.7	.7668+03	.9362+03	-7.8
008000	022	243	11.6	.7640+03	.9332+03	-7.9
008100	023	251	11.4	.7612+03	.9304+03	-8.0
008200	017	247	11.2	.7585+03	.9277+03	-8.1
008300	018	238	11.0	.7557+03	.9250+03	-8.3
008400	020	239	10.8	.7529+03	.9223+03	-8.4
008500	017	240	10.6	.7502+03	.9195+03	-8.5
008600	014	228	10.5	.7475+03	.9168+03	-8.6
008700	018	218	10.2	.7447+03	.9142+03	-8.7
008800	020	223	10.0	.7420+03	.9115+03	-8.9
008900	017	231	9.8	.7393+03	.9088+03	-9.0
009000	018	233	9.6	.7366+03	.9061+03	-9.1
009100	020	232	9.3	.7339+03	.9036+03	-9.2
009200	020	237	9.1	.7312+03	.9012+03	-9.3
009300	017	248	8.8	.7285+03	.8987+03	-9.5
009400	015	248	8.6	.7259+03	.8962+03	-9.6
009500	016	241	8.3	.7232+03	.8938+03	-9.7
009600	018	247	8.0	.7205+03	.8913+03	-9.8
009700	015	255	7.8	.7179+03	.8889+03	-9.9
009800	013	250	7.5	.7152+03	.8864+03	-10.1
009900	016	247	7.3	.7126+03	.8840+03	-10.2

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
010000	015	258	7.0	.7100+03	.8816+03	-10.3
010100	013	256	6.9	.7074+03	.8787+03	-10.4
010200	013	252	6.7	.7047+03	.8759+03	-10.5
010300	015	268	6.6	.7021+03	.8731+03	-10.6
010400	011	274	6.4	.6995+03	.8703+03	-10.7
010500	012	266	6.3	.6969+03	.8675+03	-10.7
010600	014	273	6.2	.6944+03	.8648+03	-10.8
010700	015	270	6.0	.6918+03	.8620+03	-10.9
010800	019	268	5.9	.6892+03	.8592+03	-11.0
010900	020	276	5.7	.6867+03	.8565+03	-11.1
011000	022	275	5.6	.6841+03	.8538+03	-11.2
011100	026	275	5.4	.6816+03	.8511+03	-11.4
011200	027	272	5.3	.6790+03	.8484+03	-11.6
011300	028	271	5.1	.6765+03	.8458+03	-11.7
011400	027	270	5.0	.6740+03	.8431+03	-11.9
011500	029	266	4.8	.6715+03	.8405+03	-12.1
011600	028	265	4.6	.6690+03	.8378+03	-12.3
011700	029	263	4.5	.6665+03	.8352+03	-12.5
011800	030	258	4.3	.6640+03	.8326+03	-12.6
011900	028	256	4.2	.6616+03	.8300+03	-12.8
012000	027	253	4.0	.6591+03	.8274+03	-13.0
012100	030	252	3.8	.6566+03	.8248+03	-13.2
012200	031	257	3.6	.6542+03	.8223+03	-13.3
012300	031	259	3.5	.6517+03	.8198+03	-13.5
012400	032	255	3.3	.6493+03	.8172+03	-13.7
012500	032	265	3.1	.6469+03	.8147+03	-13.8
012600	034	268	2.9	.6444+03	.8122+03	-14.0
012700	032	271	2.7	.6420+03	.8097+03	-14.2
012800	031	262	2.6	.6396+03	.8072+03	-14.4
012900	033	268	2.4	.6372+03	.8047+03	-14.5
013000	032	275	2.2	.6348+03	.8022+03	-14.7
013100	032	276	2.0	.6324+03	.7999+03	-14.9
013200	030	274	1.8	.6300+03	.7975+03	-15.1
013300	034	274	1.5	.6277+03	.7951+03	-15.3
013400	032	274	1.3	.6253+03	.7928+03	-15.5
013500	032	268	1.1	.6229+03	.7904+03	-15.6
013600	034	261	.9	.6206+03	.7881+03	-15.8
013700	033	267	.7	.6182+03	.7857+03	-16.0
013800	034	265	.4	.6159+03	.7834+03	-16.2
013900	032	259	.2	.6136+03	.7811+03	-16.4
014000	033	259	.0	.6113+03	.7788+03	-16.6
014100	032	263	-.2	.6089+03	.7764+03	-16.8
014200	028	260	-.4	.6066+03	.7740+03	-16.9
014300	026	256	-.6	.6043+03	.7717+03	-17.1
014400	029	260	-.8	.6020+03	.7693+03	-17.2
014500	032	259	-1.0	.5997+03	.7669+03	-17.4
014600	033	257	-1.2	.5975+03	.7646+03	-17.6
014700	037	260	-1.4	.5952+03	.7623+03	-17.7
014800	035	264	-1.6	.5929+03	.7599+03	-17.9
014900	038	259	-1.8	.5907+03	.7576+03	-18.0

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OF POOR QUALITY

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M <sup>3</sup> )	DEW POINT (DEG C)
015000	040	257	-2.0	5884.03	.7553+03	-18.2
015100	041	262	-2.3	5862+03	.7531+03	-18.6
015200	038	260	-2.5	5839+03	.7509+03	-18.8
015300	039	257	-2.8	5817+03	.7487+03	-19.0
015400	040	262	-3.0	5795+03	.7466+03	-19.1
015500	035	263	-3.3	5772+03	.7444+03	-19.3
015600	038	257	-3.5	5750+03	.7422+03	-19.5
015700	039	258	-3.8	5728+03	.7401+03	-19.7
015800	035	260	-4.0	5706+03	.7379+03	-19.9
015900	037	256	-4.3	5684+03	.7358+03	-20.1
016000	039	256	-4.5	5663+03	.7337+03	-20.3
016100	037	259	-4.7	5641+03	.7315+03	-20.5
016200	031	258	-5.0	5619+03	.7293+03	-20.7
016300	035	258	-5.2	5597+03	.7272+03	-20.9
016400	035	261	-5.5	5575+03	.7250+03	-21.0
016500	032	260	-5.7	5554+03	.7229+03	-21.2
016600	035	256	-5.9	5532+03	.7207+03	-21.4
016700	030	261	-6.2	5511+03	.7186+03	-21.6
016800	027	259	-6.5	5490+03	.7164+03	-21.8
016900	034	257	-6.7	5468+03	.7143+03	-22.0
017000	032	263	-6.9	5447+03	.7122+03	-22.1
017100	033	264	-7.1	5426+03	.7100+03	-22.3
017200	036	260	-7.3	5405+03	.7078+03	-22.4
017300	034	264	-7.5	5384+03	.7056+03	-22.6
017400	032	265	-7.7	5363+03	.7034+03	-22.8
017500	033	258	-7.9	5342+03	.7012+03	-22.9
017600	034	260	-8.2	5321+03	.6990+03	-23.0
017700	033	257	-8.4	5300+03	.6969+03	-23.2
017800	039	254	-8.6	5280+03	.6947+03	-23.3
017900	044	256	-8.8	5259+03	.6925+03	-23.5
018000	040	258	-9.0	5238+03	.6903+03	-23.7
018100	042	258	-9.2	5218+03	.6882+03	-23.9
018200	045	257	-9.4	5197+03	.6860+03	-24.1
018300	045	257	-9.6	5177+03	.6839+03	-24.3
018400	043	259	-9.8	5157+03	.6817+03	-24.5
018500	046	256	-10.0	5136+03	.6795+03	-24.7
018600	046	256	-10.2	5116+03	.6774+03	-24.9
018700	043	258	-10.4	5096+03	.6752+03	-25.1
018800	045	252	-10.6	5076+03	.6731+03	-25.3
018900	047	253	-10.8	5056+03	.6710+03	-25.5
019000	045	256	-11.0	5036+03	.6689+03	-25.7
019100	046	252	-11.3	5016+03	.6669+03	-26.0
019200	047	254	-11.6	4996+03	.6650+03	-26.2
019300	046	256	-11.8	4976+03	.6631+03	-26.4
019400	047	253	-12.1	4957+03	.6612+03	-26.6
019500	048	253	-12.4	4937+03	.6592+03	-26.9
019600	044	256	-12.7	4917+03	.6573+03	-27.1
019700	049	253	-13.0	4898+03	.6554+03	-27.3
019800	050	257	-13.2	4878+03	.6535+03	-27.6
019900	049	258	-13.5	4859+03	.6517+03	-27.6

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OF POOR QUALITY

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M <sup>3</sup> )	DEW POINT (DEG C)
020000	050	256	-13.8	.4820+03	.6498+03	-27.8
020100	047	261	-14.0	.4820+03	.6477+03	-28.0
020200	050	262	-14.2	.4801+03	.6456+03	-28.2
020300	052	260	-14.4	.4782+03	.6436+03	-28.4
020400	053	265	-14.6	.4763+03	.6415+03	-28.6
020500	053	262	-14.8	.4744+03	.6395+03	-28.8
020600	055	262	-15.1	.4725+03	.6374+03	-29.0
020700	056	265	-15.3	.4706+03	.6354+03	-29.2
020800	057	263	-15.5	.4687+03	.6334+03	-29.4
020900	059	262	-15.7	.4668+03	.6314+03	-29.6
021000	056	263	-15.9	.4649+03	.6294+03	-29.8
021100	060	260	-16.1	.4631+03	.6274+03	-30.0
021200	059	261	-16.3	.4612+03	.6254+03	-30.2
021300	059	260	-16.6	.4593+03	.6234+03	-30.4
021400	062	258	-16.8	.4575+03	.6214+03	-30.6
021500	063	261	-17.0	.4556+03	.6194+03	-30.8
021600	061	262	-17.2	.4538+03	.6175+03	-31.0
021700	062	261	-17.4	.4520+03	.6155+03	-31.2
021800	064	264	-17.7	.4501+03	.6135+03	-31.4
021900	065	263	-17.9	.4483+03	.6116+03	-31.6
022000	067	263	-18.1	.4465+03	.6096+03	-31.8
022100	064	266	-18.3	.4447+03	.6077+03	-32.0
022200	067	265	-18.6	.4429+03	.6058+03	-32.2
022300	069	269	-18.8	.4411+03	.6039+03	-32.5
022400	066	269	-19.1	.4393+03	.6021+03	-32.7
022500	068	266	-19.3	.4375+03	.6002+03	-32.9
022600	069	269	-19.5	.4357+03	.5983+03	-33.1
022700	066	268	-19.8	.4339+03	.5964+03	-33.3
022800	068	268	-20.0	.4322+03	.5946+03	-33.6
022900	071	271	-20.3	.4304+03	.5927+03	-33.8
023000	068	271	-20.5	.4286+03	.5909+03	-34.0
023100	071	271	-20.7	.4269+03	.5889+03	-34.2
023200	069	274	-20.9	.4251+03	.5869+03	-34.4
023300	069	273	-21.1	.4234+03	.5850+03	-34.6
023400	062	273	-21.3	.4216+03	.5830+03	-34.8
023500	072	271	-21.5	.4199+03	.5811+03	-35.0
023600	071	269	-21.7	.4182+03	.5792+03	-35.2
023700	072	270	-21.9	.4164+03	.5773+03	-35.4
023800	071	272	-22.1	.4147+03	.5754+03	-35.6
023900	072	271	-22.3	.4130+03	.5734+03	-35.8
024000	075	272	-22.5	.4113+03	.5715+03	-36.0
024100	070	275	-22.8	.4096+03	.5697+03	-36.2
024200	069	275	-23.0	.4079+03	.5680+03	-36.4
024300	071	274	-23.3	.4062+03	.5662+03	-36.6
024400	069	277	-23.5	.4046+03	.5644+03	-36.8
024500	069	276	-23.8	.4029+03	.5626+03	-37.0
024600	069	275	-24.0	.4012+03	.5608+03	-37.2
024700	071	278	-24.3	.3995+03	.5591+03	-37.4
024800	070	275	-24.5	.3979+03	.5573+03	-37.6
024900	073	275	-24.8	.3962+03	.5556+03	-37.8

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
025000	072	274	-25.0	.3946+03	.5538+03	-38.0
025100	073	275	-25.3	.3929+03	.5521+03	-38.2
025200	074	276	-25.5	.3913+03	.5503+03	-38.4
025300	075	277	-25.8	.3897+03	.5486+03	-38.6
025400	077	275	-26.0	.3880+03	.5468+03	-38.8
025500	080	275	-26.3	.3864+03	.5451+03	-39.0
025600	078	276	-26.5	.3848+03	.5434+03	-39.3
025700	079	272	-26.8	.3832+03	.5416+03	-39.5
025800	078	275	-27.0	.3816+03	.5399+03	-39.7
025900	076	275	-27.3	.3800+03	.5382+03	-39.9
026000	076	272	-27.5	.3784+03	.5365+03	-40.1
026100	078	276	-27.8	.3768+03	.5348+03	-40.3
026200	077	275	-28.0	.3752+03	.5330+03	-40.5
026300	077	274	-28.3	.3736+03	.5313+03	-40.7
026400	076	277	-28.5	.3720+03	.5296+03	-40.9
026500	073	275	-28.8	.3704+03	.5279+03	-41.1
026600	077	273	-29.0	.3689+03	.5262+03	-41.4
026700	074	276	-29.3	.3673+03	.5245+03	-41.6
026800	076	273	-29.5	.3657+03	.5229+03	-41.8
026900	078	273	-29.8	.3642+03	.5212+03	-42.0
027000	072	274	-30.0	.3627+03	.5195+03	-42.2
027100	077	272	-30.3	.3611+03	.5178+03	-42.4
027200	078	274	-30.5	.3596+03	.5161+03	-42.6
027300	076	272	-30.8	.3580+03	.5145+03	-42.8
027400	078	273	-31.0	.3565+03	.5128+03	-43.0
027500	077	274	-31.3	.3550+03	.5111+03	-43.2
027600	081	272	-31.5	.3535+03	.5095+03	-43.5
027700	081	275	-31.8	.3519+03	.5078+03	-43.7
027800	084	272	-32.0	.3504+03	.5062+03	-43.9
027900	087	272	-32.3	.3489+03	.5045+03	-44.1
028000	084	273	-32.5	.3473+03	.5029+03	-44.3
028100	084	274	-32.7	.3460+03	.5012+03	-44.5
028200	082	273	-32.9	.3445+03	.4995+03	-44.7
028300	084	274	-33.1	.3430+03	.4977+03	-44.8
028400	085	275	-33.3	.3415+03	.4960+03	-45.0
028500	086	274	-33.5	.3400+03	.4943+03	-45.2
028600	088	274	-33.8	.3386+03	.4926+03	-45.4
028700	091	275	-34.0	.3371+03	.4909+03	-45.6
028800	088	276	-34.2	.3356+03	.4892+03	-45.7
028900	090	275	-34.4	.3342+03	.4876+03	-45.9
029000	091	276	-34.6	.3328+03	.4859+03	-46.1
029100	094	276	-34.8	.3313+03	.4842+03	-46.3
029200	092	278	-35.0	.3299+03	.4825+03	-46.5
029300	091	277	-35.3	.3284+03	.4809+03	-46.7
029400	092	279	-35.5	.3270+03	.4792+03	-46.9
029500	089	280	-35.7	.3256+03	.4776+03	-47.1
029600	089	279	-35.9	.3241+03	.4760+03	-47.3
029700	086	278	-36.1	.3227+03	.4743+03	-47.5
029800	086	279	-36.4	.3213+03	.4727+03	-47.7
029900	090	280	-36.6	.3199+03	.4711+03	-47.9

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TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
030000	093	280	-36.8	.3165+03	.4695+03	-48.1
030100	092	279	-37.0	.3171+03	.4679+03	-48.3
030200	088	281	-37.3	.3157+03	.4663+03	-48.5
030300	089	279	-37.5	.3144+03	.4647+03	-48.7
030400	088	280	-37.7	.3130+03	.4631+03	-48.9
030500	090	279	-37.9	.3116+03	.4615+03	-49.0
030600	089	281	-38.2	.3102+03	.4599+03	-49.2
030700	088	281	-38.4	.3089+03	.4583+03	-49.4
030800	087	278	-38.6	.3075+03	.4568+03	-49.6
030900	085	282	-38.9	.3062+03	.4552+03	-49.8
031000	087	279	-39.1	.3048+03	.4537+03	-50.0
031100	088	279	-39.3	.3035+03	.4520+03	-50.2
031200	084	280	-39.5	.3021+03	.4505+03	-50.4
031300	081	278	-39.7	.3008+03	.4489+03	-50.6
031400	083	277	-39.9	.2994+03	.4473+03	-50.8
031500	088	276	-40.1	.2981+03	.4457+03	-50.9
031600	090	274	-40.4	.2968+03	.4441+03	-51.1
031700	085	277	-40.6	.2955+03	.4425+03	-51.3
031800	087	274	-40.8	.2942+03	.4410+03	-51.5
031900	086	276	-41.0	.2929+03	.4394+03	-51.7
032000	086	276	-41.2	.2916+03	.4379+03	-51.9
032100	085	275	-41.5	.2903+03	.4364+03	-52.1
032200	083	276	-41.7	.2890+03	.4350+03	-52.3
032300	084	277	-42.0	.2877+03	.4335+03	-52.6
032400	086	278	-42.3	.2864+03	.4321+03	-52.8
032500	084	279	-42.5	.2851+03	.4307+03	-53.0
032600	085	280	-42.8	.2838+03	.4292+03	-53.2
032700	087	280	-43.1	.2825+03	.4278+03	-53.4
032800	088	280	-43.4	.2813+03	.4264+03	-53.7
032900	093	279	-43.6	.2800+03	.4250+03	-53.9
033000	090	282	-43.9	.2787+03	.4236+03	-54.1
033100	089	280	-44.1	.2775+03	.4221+03	-54.3
033200	093	283	-44.4	.2762+03	.4206+03	-54.5
033300	091	284	-44.6	.2750+03	.4192+03	-54.6
033400	089	280	-44.9	.2737+03	.4177+03	-54.8
033500	092	283	-45.1	.2725+03	.4162+03	-55.0
033600	089	283	-45.3	.2713+03	.4148+03	-55.2
033700	094	281	-45.6	.2700+03	.4134+03	-55.4
033800	091	283	-45.8	.2688+03	.4119+03	-55.5
033900	090	280	-46.1	.2676+03	.4105+03	-55.7
034000	093	282	-46.3	.2664+03	.4091+03	-55.9
034100	092	281	-46.6	.2652+03	.4076+03	-56.1
034200	091	277	-46.8	.2639+03	.4062+03	-56.3
034300	090	279	-47.1	.2627+03	.4049+03	-56.6
034400	090	277	-47.3	.2615+03	.4035+03	-56.8
034500	091	278	-47.6	.2603+03	.4021+03	-57.0
034600	091	278	-47.9	.2591+03	.4007+03	-57.2
034700	095	277	-48.1	.2580+03	.3993+03	-57.4
034800	093	278	-48.4	.2568+03	.3979+03	-57.7
034900	092	278	-48.6	.2556+03	.3966+03	-57.9

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
035300	092	276	-48.9	.2544+03	.3952+03	-58.1
035100	092	277	-49.1	.2532+03	.3938+03	-58.3
035200	092	275	-49.3	.2521+03	.3923+03	-58.5
035300	092	276	-49.5	.2509+03	.3909+03	-58.6
035400	090	276	-49.7	.2497+03	.3894+03	-58.8
035500	093	276	-49.9	.2486+03	.3880+03	-59.0
035500	090	279	-50.2	.2474+03	.3866+03	-59.2
035700	092	277	-50.4	.2463+03	.3851+03	-59.4
035800	092	276	-50.6	.2452+03	.3837+03	-59.5
035900	091	277	-50.8	.2440+03	.3823+03	-59.7
036000	092	275	-51.0	.2429+03	.3809+03	-59.9
036100	091	276	-51.3	.2418+03	.3795+03	-60.1
036200	091	278	-51.5	.2406+03	.3782+03	-60.4
036300	092	274	-51.8	.2395+03	.3768+03	-60.6
036400	094	273	-52.0	.2384+03	.3755+03	-60.8
036500	095	272	-52.3	.2373+03	.3742+03	-61.0
036600	097	276	-52.5	.2362+03	.3728+03	-61.3
036700	094	275	-52.8	.2351+03	.3715+03	-61.5
036800	095	274	-53.0	.2340+03	.3702+03	-61.7
036900	094	275	-53.3	.2329+03	.3689+03	-62.0
037000	095	273	-53.5	.2318+03	.3676+03	-62.2
037100	097	273	-53.7	.2307+03	.3662+03	-62.4
037200	097	274	-53.9	.2296+03	.3648+03	-62.6
037300	098	274	-54.1	.2285+03	.3634+03	-62.7
037400	100	273	-54.3	.2274+03	.3620+03	-62.9
037500	097	275	-54.5	.2263+03	.3606+03	-63.1
037600	095	275	-54.7	.2253+03	.3592+03	-63.3
037700	095	275	-54.9	.2242+03	.3579+03	-63.5
037800	096	274	-55.1	.2232+03	.3565+03	-63.6
037900	097	273	-55.3	.2221+03	.3552+03	-63.8
038000	097	277	-55.5	.2211+03	.3538+03	-64.0
038100	095	274	-55.8	.2200+03	.3525+03	-64.2
038200	097	273	-56.0	.2189+03	.3512+03	-64.5
038300	096	273	-56.3	.2179+03	.3500+03	-64.7
038400	096	275	-56.5	.2169+03	.3487+03	-64.9
038500	095	271	-56.8	.2158+03	.3474+03	-65.1
038600	096	272	-57.0	.2148+03	.3462+03	-65.4
038700	096	271	-57.3	.2138+03	.3449+03	-65.6
038800	098	271	-57.5	.2127+03	.3437+03	-65.8
038900	098	270	-57.6	.2117+03	.3424+03	-66.1
039000	098	269	-58.0	.2107+03	.3412+03	-66.3
039100	102	269	-58.1	.2097+03	.3397+03	-66.9
039200	099	262	-58.1	.2087+03	.3381+03	-66.9
039300	097	269	-58.2	.2077+03	.3366+03	-66.9
039400	097	270	-58.3	.2067+03	.3351+03	-66.9
039500	098	270	-58.3	.2057+03	.3336+03	-66.9
039600	102	268	-58.4	.2047+03	.3321+03	-66.9
039700	104	267	-58.5	.2037+03	.3306+03	-66.9
039800	105	267	-58.6	.2027+03	.3291+03	-66.9
039900	105	269	-58.6	.2018+03	.3277+03	-66.9

ORIGINAL RECORD  
OF POOR QUALITY

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
040000	107	268	-58.7	.2008+03	.3262+03	-9999.
040100	110	268	-58.7	.1998+03	.3247+03	-9999.
040200	113	268	-58.8	.1989+03	.3232+03	-9999.
040300	118	268	-58.8	.1979+03	.3217+03	-9999.
040400	122	268	-58.9	.1970+03	.3202+03	-9999.
040500	109	268	-58.9	.1960+03	.3187+03	-9999.
040600	107	268	-58.9	.1951+03	.3172+03	-9999.
040700	105	268	-59.0	.1941+03	.3158+03	-9999.
040800	105	268	-59.0	.1932+03	.3143+03	-9999.
040900	109	267	-59.1	.1923+03	.3129+03	-9999.
041000	111	268	-59.1	.1913+03	.3114+03	-9999.
041100	117	269	-59.0	.1904+03	.3097+03	-9999.
041200	122	270	-58.8	.1895+03	.3080+03	-9999.
041300	124	271	-58.7	.1886+03	.3064+03	-9999.
041400	128	271	-58.6	.1877+03	.3047+03	-9999.
041500	130	272	-58.5	.1868+03	.3031+03	-9999.
041600	131	271	-58.3	.1859+03	.3014+03	-9999.
041700	131	271	-58.2	.1850+03	.2998+03	-9999.
041800	131	273	-58.1	.1841+03	.2982+03	-9999.
041900	134	272	-57.9	.1832+03	.2966+03	-9999.
042000	136	274	-57.8	.1823+03	.2950+03	-9999.
042100	138	273	-57.6	.1815+03	.2935+03	-9999.
042200	138	273	-57.8	.1806+03	.2921+03	-9999.
042300	139	272	-57.8	.1797+03	.2907+03	-9999.
042400	140	272	-57.6	.1789+03	.2893+03	-9999.
042500	139	272	-57.8	.1780+03	.2879+03	-9999.
042600	135	273	-57.7	.1772+03	.2865+03	-9999.
042700	134	272	-57.7	.1763+03	.2851+03	-9999.
042800	135	273	-57.7	.1755+03	.2837+03	-9999.
042900	136	274	-57.7	.1746+03	.2824+03	-9999.
043000	139	273	-57.7	.1738+03	.2810+03	-9999.
043100	140	272	-57.7	.1730+03	.2797+03	-9999.
043200	138	273	-57.7	.1721+03	.2784+03	-9999.
043300	137	272	-57.8	.1713+03	.2771+03	-9999.
043400	136	273	-57.8	.1705+03	.2758+03	-9999.
043500	138	274	-57.8	.1697+03	.2745+03	-9999.
043600	140	275	-57.8	.1689+03	.2732+03	-9999.
043700	142	276	-57.8	.1680+03	.2719+03	-9999.
043800	143	277	-57.9	.1672+03	.2706+03	-9999.
043900	145	275	-57.9	.1664+03	.2693+03	-9999.
044000	145	274	-57.9	.1656+03	.2681+03	-9999.
044100	146	276	-58.0	.1648+03	.2669+03	-9999.
044200	145	275	-58.1	.1640+03	.2658+03	-9999.
044300	146	275	-58.2	.1633+03	.2646+03	-9999.
044400	147	275	-58.3	.1625+03	.2635+03	-9999.
044500	147	274	-58.4	.1617+03	.2624+03	-9999.
044600	146	276	-58.6	.1609+03	.2612+03	-9999.
044700	146	276	-58.7	.1601+03	.2601+03	-9999.
044800	144	277	-58.8	.1594+03	.2590+03	-9999.
044900	144	278	-58.9	.1586+03	.2579+03	-9999.

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
045000	146	277	-52.0	1578.03	2568.03	-9999.
045100	146	277	-59.1	1571.03	2557.03	-9999.
045200	147	277	-52.2	1563.03	2546.03	-9999.
045300	148	277	-59.4	1556.03	2535.03	-9999.
045400	150	276	-59.5	1548.03	2524.03	-9999.
045500	150	276	-59.6	1541.03	2513.03	-9999.
045600	154	275	-52.7	1533.03	2503.03	-9999.
045700	154	276	-59.6	1526.03	2492.03	-9999.
045800	156	275	-60.0	1518.03	2481.03	-9999.
045900	155	277	-60.1	1511.03	2471.03	-9999.
046000	156	277	-60.2	1504.03	2460.03	-9999.
046100	158	277	-60.3	1497.03	2449.03	-9999.
046200	158	278	-60.3	1489.03	2438.03	-9999.
046300	158	276	-60.4	1482.03	2427.03	-9999.
046400	158	278	-60.5	1475.03	2416.03	-9999.
046500	156	277	-60.5	1468.03	2405.03	-9999.
046600	154	278	-60.6	1461.03	2394.03	-9999.
046700	153	278	-60.7	1453.03	2383.03	-9999.
046800	150	279	-60.8	1446.03	2372.03	-9999.
046900	149	278	-60.6	1439.03	2362.03	-9999.
047000	148	278	-60.9	1432.03	2351.03	-9999.
047100	145	279	-61.0	1425.03	2340.03	-9999.
047200	142	279	-61.0	1418.03	2329.03	-9999.
047300	140	278	-61.0	1412.03	2318.03	-9999.
047400	138	277	-61.1	1405.03	2307.03	-9999.
047500	135	278	-61.1	1398.03	2297.03	-9999.
047600	133	277	-61.1	1391.03	2286.03	-9999.
047700	130	276	-61.2	1384.03	2275.03	-9999.
047800	129	277	-61.2	1378.03	2264.03	-9999.
047900	129	277	-61.3	1371.03	2254.03	-9999.
048000	127	279	-61.3	1364.03	2243.03	-9999.
048100	123	276	-61.5	1358.03	2234.03	-9999.
048200	122	275	-61.6	1351.03	2225.03	-9999.
048300	119	275	-61.8	1344.03	2216.03	-9999.
048400	116	274	-62.0	1338.03	2207.03	-9999.
048500	115	273	-62.1	1331.03	2198.03	-9999.
048600	111	269	-62.3	1325.03	2189.03	-9999.
048700	108	269	-62.5	1318.03	2180.03	-9999.
048800	108	267	-62.7	1312.03	2171.03	-9999.
048900	108	266	-62.8	1305.03	2162.03	-9999.
049000	109	263	-63.0	1299.03	2153.03	-9999.
049100	108	263	-63.1	1293.03	2144.03	-9999.
049200	108	261	-63.2	1286.03	2134.03	-9999.
049300	108	261	-63.3	1280.03	2125.03	-9999.
049400	109	263	-63.4	1274.03	2116.03	-9999.
049500	112	260	-63.5	1267.03	2106.03	-9999.
049600	111	263	-63.7	1261.03	2097.03	-9999.
049700	112	263	-63.8	1255.03	2088.03	-9999.
049800	114	264	-63.9	1249.03	2079.03	-9999.
049900	112	265	-64.0	1243.03	2069.03	-9999.

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M <sup>3</sup> )	DEW POINT (DEG C)
050000	112	264	-64.1	.1236+03	.2060+03	-9999.
050100	114	263	-64.3	.1230+03	.2052+03	-9999.
050200	111	266	-64.4	.1224+03	.2043+03	-9999.
050300	111	264	-64.6	.1218+03	.2035+03	-9999.
050400	111	264	-64.7	.1212+03	.2026+03	-9999.
050500	111	263	-64.9	.1206+03	.2018+03	-9999.
050600	111	266	-65.1	.1200+03	.2009+03	-9999.
050700	112	265	-65.2	.1194+03	.2001+03	-9999.
050800	113	265	-65.4	.1188+03	.1992+03	-9999.
050900	111	266	-65.5	.1182+03	.1984+03	-9999.
051000	112	263	-65.7	.1176+03	.1976+03	-9999.
051100	113	265	-65.9	.1171+03	.1968+03	-9999.
051200	113	267	-66.1	.1165+03	.1959+03	-9999.
051300	114	266	-66.2	.1159+03	.1951+03	-9999.
051400	114	267	-66.4	.1153+03	.1943+03	-9999.
051500	114	267	-66.6	.1147+03	.1935+03	-9999.
051600	113	264	-66.8	.1142+03	.1927+03	-9999.
051700	113	266	-67.0	.1136+03	.1919+03	-9999.
051800	115	267	-67.1	.1130+03	.1911+03	-9999.
051900	113	267	-67.3	.1125+03	.1904+03	-9999.
052000	113	268	-67.5	.1119+03	.1896+03	-9999.
052100	116	267	-67.7	.1113+03	.1888+03	-9999.
052200	114	267	-68.0	.1108+03	.1881+03	-9999.
052300	114	269	-68.2	.1102+03	.1873+03	-9999.
052400	111	270	-68.4	.1097+03	.1866+03	-9999.
052500	108	268	-68.6	.1091+03	.1859+03	-9999.
052600	108	271	-68.9	.1086+03	.1851+03	-9999.
052700	106	270	-69.1	.1080+03	.1844+03	-9999.
052800	104	272	-69.3	.1075+03	.1837+03	-9999.
052900	104	271	-69.6	.1069+03	.1830+03	-9999.
053000	106	270	-69.8	.1064+03	.1823+03	-9999.
053100	104	270	-69.9	.1058+03	.1815+03	-9999.
053200	103	270	-70.1	.1053+03	.1807+03	-9999.
053300	103	266	-70.2	.1048+03	.1799+03	-9999.
053400	104	266	-70.4	.1042+03	.1791+03	-9999.
053500	104	267	-70.5	.1037+03	.1783+03	-9999.
053600	108	264	-70.7	.1032+03	.1776+03	-9999.
053700	109	263	-70.8	.1027+03	.1768+03	-9999.
053800	110	265	-71.0	.1021+03	.1760+03	-9999.
053900	108	262	-71.1	.1016+03	.1752+03	-9999.
054000	108	262	-71.3	.1011+03	.1745+03	-9999.
054100	109	262	-71.4	.1006+03	.1737+03	-9999.
054200	112	260	-71.5	.1001+03	.1728+03	-9999.
054300	115	261	-71.5	.9955+02	.1720+03	-9999.
054400	117	260	-71.6	.9909+02	.1712+03	-9999.
054500	113	261	-71.7	.9854+02	.1704+03	-9999.
054600	109	263	-71.8	.9803+02	.1696+03	-9999.
054700	106	263	-71.9	.9753+02	.1688+03	-9999.
054800	102	263	-71.9	.9703+02	.1680+03	-9999.
054900	098	265	-72.0	.9653+02	.1672+03	-9999.

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TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
055000	095	289	-72.0	.9504+02	.1664+03	-9999.
055100	094	259	-72.0	.9555+02	.1655+03	-9999.
055200	091	258	-71.9	.9506+02	.1645+03	-9999.
055300	088	260	-71.8	.9457+02	.1636+03	-9999.
055400	089	255	-71.7	.9409+02	.1627+03	-9999.
055500	090	255	-71.6	.9361+02	.1618+03	-9999.
055600	090	252	-71.4	.9313+02	.1608+03	-9999.
055700	090	253	-71.3	.9265+02	.1599+03	-9999.
055800	094	252	-71.2	.9218+02	.1590+03	-9999.
055900	095	252	-71.1	.9171+02	.1581+03	-9999.
056000	090	254	-71.0	.9124+02	.1572+03	-9999.
057000	087	256	-70.3	.8670+02	.1489+03	-9999.
058000	083	256	-70.1	.8239+02	.1414+03	-9999.
059000	084	259	-71.4	.7830+02	.1352+03	-9999.
060000	062	259	-68.9	.7440+02	.1275+03	-9999.
061000	093	238	-69.1	.7072+02	.1207+03	-9999.
062000	049	236	-68.2	.6724+02	.1143+03	-9999.
063000	046	252	-68.2	.6393+02	.1087+03	-9999.
064000	038	258	-65.9	.6080+02	.1022+03	-9999.
065000	031	250	-65.6	.5785+02	.9710+02	-9999.
066000	029	239	-63.8	.5505+02	.9161+02	-9999.
067000	039	237	-63.7	.5241+02	.8717+02	-9999.
068000	037	229	-62.8	.4989+02	.8262+02	-9999.
069000	034	225	-62.7	.4751+02	.7865+02	-9999.
070000	028	232	-62.6	.4523+02	.7484+02	-9999.
071000	014	256	-60.4	.4308+02	.7054+02	-9999.
072000	006	256	-61.1	.4103+02	.6741+02	-9999.
073000	005	291	-60.7	.3909+02	.6410+02	-9999.
074000	007	005	-60.1	.3724+02	.6089+02	-9999.
075000	003	257	-61.3	.3547+02	.5833+02	-9999.
076000	016	241	-61.1	.3379+02	.5551+02	-9999.
077000	018	268	-58.9	.3219+02	.5234+02	-9999.
078000	013	295	-58.8	.3068+02	.4986+02	-9999.
079000	009	324	-59.7	.2923+02	.4771+02	-9999.
080000	008	349	-59.9	.2785+02	.4550+02	-9999.
081000	010	322	-60.8	.2653+02	.4352+02	-9999.
082000	012	316	-60.0	.2528+02	.4132+02	-9999.
083000	010	333	-57.6	.2409+02	.3893+02	-9999.
084000	008	345	-56.5	.2297+02	.3694+02	-9999.
085000	003	028	-55.5	.2191+02	.3507+02	-9999.
086000	009	176	-54.1	.2093+02	.3329+02	-9999.
087000	015	211	-53.2	.1999+02	.3166+02	-9999.
088000	020	250	-52.4	.1909+02	.3013+02	-9999.
089000	021	269	-50.7	.1824+02	.2856+02	-9999.
090000	025	273	-50.6	.1742+02	.2727+02	-9999.
091000	033	274	-49.6	.1664+02	.2593+02	-9999.
092000	038	275	-48.5	.1589+02	.2464+02	-9999.
093000	042	275	-47.5	.1518+02	.2343+02	-9999.
094000	045	275	-46.5	.1450+02	.2229+02	-9999.
095000	050	275	-45.4	.1386+02	.2120+02	-9999.

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
096000	052	276	-28.2	1125.02	.7916.02	-9999.
097000	054	277	-42.9	1126.02	.1916.02	-9999.
098000	055	277	-41.2	1121.02	.1820.02	-9999.
099000	057	277	-39.7	1119.02	.1730.02	-9999.
100000	059	277	-38.4	1109.02	.1646.02	-9999.
101000	062	278	-37.5	1106.02	.1569.02	-9999.
102000	064	278	-36.8	1101.02	.1490.02	-9999.
103000	067	279	-36.0	9732.01	.1429.02	-9999.
104000	067	279	-34.9	9320.01	.1363.02	-9999.
105000	069	280	-33.9	8926.01	.1300.02	-9999.
106000	070	281	-32.7	8553.01	.1239.02	-9999.
107000	070	282	-31.4	8195.01	.1181.02	-9999.
108000	070	282	-30.5	7855.01	.1127.02	-9999.
109000	070	283	-29.6	7529.01	.1077.02	-9999.
110000	069	283	-28.8	7218.01	.1029.02	-9999.
111000	069	281	-28.3	6921.01	.9849.01	-9999.
112000	067	280	-27.9	6637.01	.9426.01	-9999.
113000	065	278	-27.5	6364.01	.9027.01	-9999.
114000	064	277	-27.2	6104.01	.8647.01	-9999.
115000	062	276	-27.0	5854.01	.8284.01	-9999.
116000	060	275	-26.9	5614.01	.7942.01	-9999.
117000	059	275	-26.6	5385.01	.7609.01	-9999.
118000	057	274	-26.1	5165.01	.7283.01	-9999.
119000	057	272	-24.4	4956.01	.6941.01	-9999.
120000	057	270	-22.5	4756.01	.6610.01	-9999.
121000	055	271	-20.2	4566.01	.6289.01	-9999.
122000	054	272	-18.7	4385.01	.6003.01	-9999.
123000	050	272	-17.5	4212.01	.5739.01	-9999.
124000	047	270	-17.8	4046.01	.5518.01	-9999.
125000	042	266	-18.2	3886.01	.5309.01	-9999.
126000	040	259	-19.0	3732.01	.5117.01	-9999.
127000	037	253	-19.6	3585.01	.4926.01	-9999.
128000	035	249	-19.4	3442.01	.4733.01	-9999.
129000	033	246	-19.7	3306.01	.4544.01	-9999.
130000	033	242	-19.5	3174.01	.4359.01	-9999.
131000	033	240	-19.1	3049.01	.4180.01	-9999.
132000	035	239	-18.5	2928.01	.4006.01	-9999.
133000	037	239	-17.9	2813.01	.3839.01	-9999.
134000	040	240	-17.2	2702.01	.3678.01	-9999.
135000	043	243	-16.4	2596.01	.3522.01	-9999.
136000	047	248	-15.4	2495.01	.3372.01	-9999.
137000	050	252	-14.4	2397.01	.3228.01	-9999.
138000	054	254	-13.0	2305.01	.3086.01	-9999.
139000	057	256	-11.6	2216.01	.2951.01	-9999.
140000	060	260	-10.2	2131.01	.2823.01	-9999.
141000	062	265	-8.8	2050.01	.2701.01	-9999.
142000	064	269	-7.4	1972.01	.2585.01	-9999.
143000	064	272	-6.2	1897.01	.2476.01	-9999.
144000	064	275	-4.9	1829.01	.2371.01	-9999.
145000	062	279	-3.6	1758.01	.2272.01	-9999.

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
146000	060	283	-2.5	.1692+01	.2178+01	-9999.
147000	059	287	-1.4	.1630+01	.2089+01	-9999.
148000	055	292	-0.6	.1569+01	.2006+01	-9999.
149000	052	296	-0.3	.1511+01	.1929+01	-9999.
150000	048	302	-0.1	.1456+01	.1856+01	-9999.
151000	045	307	.2	.1402+01	.1787+01	-9999.
152000	042	312	-0.2	.1351+01	.1721+01	-9999.
153000	038	318	-0.5	.1301+01	.1662+01	-9999.
154000	037	324	-0.9	.1253+01	.1603+01	-9999.
155000	035	328	-1.6	.1206+01	.1548+01	-9999.
156000	032	333	-2.2	.1162+01	.1494+01	-9999.
157000	030	339	-2.9	.1119+01	.1442+01	-9999.
158000	027	344	-3.4	.1077+01	.1391+01	-9999.
159000	023	351	-3.9	.1037+01	.1341+01	-9999.
160000	020	001	-4.4	.9982+00	.1294+01	-9999.
161000	013	018	-4.5	.9609+00	.1246+01	-9999.
162000	006	065	-4.5	.9250+00	.1199+01	-9999.
163000	008	160	-4.3	.8905+00	.1154+01	-9999.
164000	018	198	-4.9	.8572+00	.1113+01	-9999.
165000	032	218	-6.1	.8250+00	.1076+01	-9999.
166000	042	227	-7.2	.7940+00	.1040+01	-9999.
167000	047	234	-7.3	.7640+00	.1001+01	-9999.
168000	047	241	-6.6	.7352+00	.9616+00	-9999.
169000	043	243	-6.1	.7076+00	.9230+00	-9999.
170000	037	245	-5.5	.6810+00	.8864+00	-9999.
171000	032	244	-5.2	.6555+00	.8522+00	-9999.
172000	027	235	-5.5	.6310+00	.8212+00	-9999.
173000	027	215	-6.2	.6073+00	.7926+00	-9999.
174000	033	199	-7.3	.5844+00	.7659+00	-9999.
175000	043	193	-8.6	.5623+00	.7404+00	-9999.
176000	047	196	-9.5	.5410+00	.7149+00	-9999.
177000	050	202	-10.5	.5204+00	.6902+00	-9999.
178000	052	207	-11.0	.5005+00	.6652+00	-9999.
179000	055	211	-11.0	.4814+00	.6397+00	-9999.
180000	057	215	-10.7	.4630+00	.6146+00	-9999.
181000	060	218	-10.8	.4453+00	.5912+00	-9999.
182000	065	220	-11.2	.4283+00	.5696+00	-9999.
183000	070	220	-12.1	.4119+00	.5497+00	-9999.
184000	076	224	-13.1	.3961+00	.5306+00	-9999.
185000	081	230	-14.0	.3808+00	.5119+00	-9999.
186000	087	239	-14.9	.3661+00	.4938+00	-9999.
187000	092	251	-15.9	.3518+00	.4765+00	-9999.
188000	096	260	-16.9	.3381+00	.4592+00	-9999.
189000	099	268	-17.7	.3249+00	.4430+00	-9999.
190000	101	274	-18.7	.3121+00	.4272+00	-9999.
191000	103	279	-19.7	.2999+00	.4121+00	-9999.
192000	101	284	-20.6	.2880+00	.3973+00	-9999.
193000	099	287	-21.5	.2766+00	.3829+00	-9999.
194000	101	289	-22.1	.2656+00	.3686+00	-9999.
195000	103	290	-22.4	.2550+00	.3542+00	-9999.

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OF POOR C

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M <sup>3</sup> )	DEW POINT (DEG C)
196000	103	291	-22.4	.2448+00	.3400+00	-9999.
197000	103	292	-22.5	.2351+00	.3268+00	-9999.
198000	101	293	-22.8	.2257+00	.3140+00	-9999.
199000	099	295	-23.7	.2167+00	.3027+00	-9999.
200000	096	297	-24.8	.2090+00	.2918+00	-9999.
201000	092	299	-25.6	.1996+00	.2809+00	-9999.
202000	089	302	-26.3	.1915+00	.2703+00	-9999.
203000	084	303	-27.3	.1838+00	.2605+00	-9999.
204000	079	304	-28.5	.1763+00	.2510+00	-9999.
205000	074	307	-29.6	.1691+00	.2418+00	-9999.
206000	069	313	-30.6	.1621+00	.2328+00	-9999.
207000	065	320	-31.7	.1555+00	.2244+00	-9999.
208000	060	330	-32.9	.1490+00	.2160+00	-9999.
209000	059	341	-34.0	.1428+00	.2080+00	-9999.
210000	059	350	-34.6	.1359+00	.1999+00	-9999.
211000	059	359	-35.1	.1311+00	.1918+00	-9999.
212000	060	006	-35.5	.1253+00	.1841+00	-9999.
213000	062	010	-35.7	.1204+00	.1766+00	-9999.
214000	062	014	-35.9	.1153+00	.1693+00	-9999.
215000	059	024	-36.9	.1104+00	.1628+00	-9999.
216000	057	036	-38.1	.1058+00	.1568+00	-9999.
217000	059	048	-39.3	.1013+00	.1509+00	-9999.
218000	054	056	-40.6	.9690-01	.1452+00	-9999.
219000	052	065	-42.0	.9280-01	.1398+00	-9999.
220000	050	074	-43.1	.8880-01	.1346+00	-9999.
221000	035	081	-43.9	.8490-01	.1290+00	-9999.
222000	021	097	-44.4	.8130-01	.1238+00	-9999.
223000	021	136	-45.4	.7770-01	.1188+00	-9999.
224000	021	155	-46.7	.7430-01	.1143+00	-9999.
225000	021	176	-46.0	.7110-01	.1090+00	-9999.
226000	021	198	-45.5	.6790-01	.1035+00	-9999.
227000	021	215	-45.5	.6430-01	.9841-01	-9999.
228000	023	227	-46.9	.6100-01	.9391-01	-9999.
229000	023	227	-49.9	.5780-01	.9020-01	-9999.
230000	025	226	-53.1	.5470-01	.8660-01	-9999.
231000	025	240	-53.5	.5190-01	.8231-01	-9999.
232000	027	230	-54.0	.4910-01	.7805-01	-9999.
233000	027	219	-54.5	.4660-01	.7425-01	-9999.
234000	027	208	-55.0	.4410-01	.7042-01	-9999.
235000	028	198	-55.0	.4180-01	.6675-01	-9999.
236000	030	127	-54.2	.3990-01	.6347-01	-9999.
237000	033	178	-53.0	.3810-01	.6028-01	-9999.
238000	032	173	-52.2	.3600-01	.5738-01	-9999.
239000	038	164	-51.2	.3440-01	.5461-01	-9999.
240000	042	159	-50.2	.3320-01	.5186-01	-9999.
241000	045	155	-50.2	.3170-01	.4952-01	-9999.
242000	050	151	-50.2	.3030-01	.4733-01	-9999.
243000	054	149	-50.5	.2900-01	.4537-01	-9999.
244000	057	146	-52.0	.2770-01	.4364-01	-9999.
245000	062	145	-53.5	.2640-01	.4188-01	-9999.

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TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M <sup>3</sup> )	DEW POINT (DEG C)
246000	167	149	-55.0	.2520-01	.4024-01	-9999.
247000	170	143	-56.2	.2410-01	.3869-01	-9999.
248000	176	143	-58.1	.2300-01	.3726-01	-9999.
249000	181	143	-59.2	.2190-01	.3565-01	-9999.
250000	187	143	-59.2	.2090-01	.3402-01	-9999.
251000	192	143	-59.7	.1990-01	.3247-01	-9999.
252000	199	148	-61.2	.1900-01	.3122-01	-9999.
253000	104	145	-61.7	.1810-01	.2982-01	-9999.
254000	111	145	-62.3	.1720-01	.2841-01	-9999.
255000	116	146	-63.2	.1640-01	.2721-01	-9999.
256000	123	147	-64.2	.1570-01	.2617-01	-9999.
257000	128	148	-64.8	.1490-01	.2492-01	-9999.
258000	133	148	-65.2	.1420-01	.2378-01	-9999.
259000	138	149	-66.2	.1350-01	.2272-01	-9999.
260000	143	149	-66.4	.1290-01	.2174-01	-9999.
261000	148	150	-67.2	.1230-01	.2080-01	-9999.
262000	152	151	-68.2	.1170-01	.1988-01	-9999.
263000	155	151	-68.9	.1110-01	.1893-01	-9999.
264000	158	151	-69.5	.1060-01	.1813-01	-9999.
265000	162	152	-70.2	.1010-01	.1733-01	-9999.
266000	165	152	-71.5	.9600-02	.1659-01	-9999.
267000	167	152	-72.2	.9100-02	.1577-01	-9999.
268000	168	153	-73.2	.8600-02	.1498-01	-9999.
269000	168	153	-74.1	.8200-02	.1435-01	-9999.
270000	168	153	-74.6	.7800-02	.1362-01	-9999.
271000	168	153	-75.2	.7400-02	.1302-01	-9999.
272000	168	153	-75.7	.7100-02	.1253-01	-9999.
273000	167	153	-76.2	.6700-02	.1185-01	-9999.
274000	163	153	-77.2	.6400-02	.1138-01	-9999.
275000	160	153	-78.2	.6000-02	.1072-01	-9999.
276000	157	153	-78.2	.5700-02	.1018-01	-9999.
277000	152	153	-79.2	.5500-02	.9876-02	-9999.
278000	145	152	-79.2	.5200-02	.9338-02	-9999.
279000	138	152	-79.2	.4900-02	.8799-02	-9999.
280000	128	152	-79.2	.4700-02	.8480-02	-9999.
281000	120	151	-79.3	.4468-02	.8024-02	-9999.
282000	111	149	-79.5	.4248-02	.7628-02	-9999.
283000	103	148	-79.7	.4038-02	.7252-02	-9999.
284000	95	147	-79.9	.3839-02	.6894-02	-9999.
285000	87	145	-80.1	.3650-02	.6554-02	-9999.
286000	79	142	-80.3	.3470-02	.6231-02	-9999.
287000	71	140	-80.5	.3299-02	.5923-02	-9999.
288000	63	136	-80.6	.3136-02	.5634-02	-9999.
289000	56	132	-80.8	.2981-02	.5358-02	-9999.
290000	49	126	-81.0	.2834-02	.5090-02	-9999.
291000	42	119	-81.2	.2695-02	.4839-02	-9999.
292000	37	109	-81.4	.2562-02	.4600-02	-9999.
293000	33	97	-81.6	.2435-02	.4373-02	-9999.
294000	31	82	-81.8	.2315-02	.4157-02	-9999.
295000	31	66	-81.9	.2201-02	.3952-02	-9999.

TABLE 4. (Concluded)

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TABLE 5. STS-6 FINAL SRB DESCENT METEOROLOGICAL DATA TAPE

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
000020	017	070	21.1	.1010+03	.1200+04	11.1
001000	014	140	19.7	.0966+03	.1165+04	10.9
002000	019	147	15.7	.0948+03	.1140+04	10.0
003000	016	134	12.4	.0912+03	.1112+04	7.1
004000	007	123	12.5	.0826+03	.1076+04	-7.9
005000	004	212	14.0	.0521+03	.1733+04	-14.0
006000	005	224	13.2	.0219+03	.2982+03	-19.3
007000	004	266	12.0	.0795+03	.0974+03	-14.9
008000	003	271	10.9	.0742+03	.0936+03	-15.6
009000	005	204	9.6	.07367+03	.0906+03	-16.5
010000	010	174	7.1	.07101+03	.0819+03	-17.2
011000	015	171	5.5	.06482+03	.0547+03	-18.7
012000	023	170	3.9	.0551+03	.0242+03	-19.8
013000	030	165	2.2	.04348+03	.0026+03	-20.5
014000	047	164	.2	.06113+03	.2785+03	-21.1
015000	049	163	-1.8	.04844+03	.0755+03	-23.1
016000	047	160	-4.0	.0663+03	.2326+03	-24.9
017000	040	155	-6.5	.0448+03	.1114+03	-26.1
018000	040	153	-9.2	.05239+03	.6503+03	-27.5
019000	041	157	-11.7	.0306+03	.6708+03	-28.8
020000	046	162	-14.2	.0490+03	.6509+03	-30.3
021000	051	167	-16.0	.0649+03	.6296+03	-32.2
022000	060	160	-18.9	.0465+03	.6116+03	-34.9
023000	069	154	-22.1	.0285+03	.5945+03	-37.7
024000	069	154	-23.7	.04111+03	.5740+03	-40.5
025000	067	157	-25.5	.03943+03	.5546+03	-42.6
026000	060	156	-29.1	.03781+03	.5396+03	-45.6
027000	057	154	-29.7	.0423+03	.5184+03	-45.9
028000	056	156	-32.1	.0472+03	.5017+03	-47.8
029000	041	157	-35.2	.0325+03	.4867+03	-50.2
030000	069	154	-37.6	.03182+03	.4756+03	-52.1
031000	077	154	-39.9	.0045+03	.0547+03	-54.0
032000	045	159	-42.4	.02912+03	.0396+03	-55.9
033000	048	160	-45.0	.02783+03	.0250+03	-57.8
034000	045	160	-47.1	.02659+03	.0098+03	-59.3
035000	079	160	-49.6	.02519+03	.0397+03	-61.1
036000	075	158	-52.0	.02444+03	.0318+03	-63.2
037000	045	156	-54.3	.02312+03	.0681+03	-65.1
038000	104	157	-56.2	.0205+03	.0541+03	-67.4
039000	121	154	-59.0	.02102+03	.0419+03	-69.1
040000	120	157	-58.0	.0203+03	.0324+03	-68.4
041000	117	157	-56.2	.01909+03	.0065+03	-66.9
042000	112	159	-55.4	.01820+03	.0212+03	-66.4
043000	108	160	-55.4	.01736+03	.0272+03	-66.8
044000	105	159	-56.1	.01655+03	.0265+03	-67.8
045000	100	155	-57.5	.01577+03	.0248+03	-68.4
046000	093	151	-58.4	.01503+03	.0243+03	-69.9
047000	044	144	-61.2	.01442+03	.0235+03	-99.9
048000	048	150	-60.9	.01364+03	.0232+03	-99.9
049000	113	157	-61.8	.01299+03	.0214+03	-99.9

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TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
050000	131	158	-62.7	.1237+03	.2097+03	-9999.
051000	135	155	-65.3	.1177+03	.1973+03	-9999.
052000	132	153	-67.9	.1120+03	.1701+03	-9999.
053000	129	154	-69.6	.1064+03	.1822+03	-9999.
054000	120	158	-70.1	.1012+03	.1736+03	-9999.
055000	107	159	-69.5	.9816+02	.1645+03	-9999.
056000	097	157	-68.9	.9181+02	.1559+03	-9999.
057000	092	156	-69.4	.8649+02	.1486+03	-9999.
058000	090	155	-69.2	.8259+02	.1411+03	-9999.
059000	085	155	-68.1	.7852+02	.1334+03	-9999.
060000	078	155	-68.2	.7466+02	.1269+03	-9999.
061000	063	157	-67.6	.7100+02	.1203+03	-9999.
062000	051	148	-66.8	.6753+02	.1150+03	-9999.
063000	045	145	-64.1	.6475+02	.1071+03	-9999.
064000	043	149	-60.5	.6118+02	.1002+03	-9999.
065000	045	154	-60.0	.5828+02	.9525+02	-9999.
066000	045	161	-60.0	.5552+02	.9074+02	-9999.
067000	043	164	-60.2	.5290+02	.8654+02	-9999.
068000	045	172	-60.7	.5039+02	.8263+02	-9999.
069000	022	181	-60.3	.4800+02	.7856+02	-9999.
070000	009	186	-60.5	.4573+02	.7492+02	-9999.
071000	003	183	-60.7	.4356+02	.7143+02	-9999.
072000	002	154	-60.6	.4150+02	.6802+02	-9999.
073000	003	176	-58.7	.3954+02	.6423+02	-9999.
074000	003	221	-56.9	.3769+02	.6072+02	-9999.
075000	004	292	-57.4	.3593+02	.5802+02	-9999.
076000	005	130	-58.1	.3425+02	.5548+02	-9999.
077000	004	322	-56.4	.3261+02	.5241+02	-9999.
078000	005	295	-55.3	.3105+02	.4965+02	-9999.
079000	008	282	-54.8	.2957+02	.4718+02	-9999.
080000	007	292	-54.6	.2815+02	.4487+02	-9999.
081000	006	292	-54.5	.2681+02	.4271+02	-9999.
082000	005	291	-54.2	.2553+02	.4061+02	-9999.
083000	005	262	-54.0	.2431+02	.3864+02	-9999.
084000	003	257	-53.5	.2314+02	.3671+02	-9999.
085000	005	252	-53.0	.2204+02	.3487+02	-9999.
086000	008	255	-52.5	.2098+02	.3313+02	-9999.
087000	013	261	-51.9	.2002+02	.3153+02	-9999.
088000	018	260	-51.5	.1911+02	.3004+02	-9999.
089000	023	271	-51.0	.1825+02	.2862+02	-9999.
090000	030	273	-50.6	.1742+02	.2727+02	-9999.
091000	033	274	-49.6	.1664+02	.2592+02	-9999.
092000	038	275	-48.5	.1589+02	.2464+02	-9999.
093000	042	275	-47.5	.1518+02	.2343+02	-9999.
094000	045	275	-46.5	.1450+02	.2229+02	-9999.
095000	050	275	-45.4	.1386+02	.2120+02	-9999.
096000	052	276	-44.2	.1325+02	.2016+02	-9999.
097000	054	277	-42.9	.1267+02	.1916+02	-9999.
098000	055	277	-41.2	.1212+02	.1820+02	-9999.
099000	057	277	-39.7	.1159+02	.1730+02	-9999.

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
100000	059	277	-38.4	.1109+02	.1646+02	-9999.
101000	062	278	-37.5	.1062+02	.1569+02	-9999.
102000	064	278	-36.8	.1016+02	.1498+02	-9999.
103000	067	279	-36.0	.9732+01	.1429+02	-9999.
104000	067	279	-34.9	.9320+01	.1363+02	-9999.
105000	069	280	-33.9	.8926+01	.1300+02	-9999.
106000	070	281	-32.7	.8533+01	.1239+02	-9999.
107000	070	282	-31.4	.8195+01	.1181+02	-9999.
108000	070	282	-30.5	.7855+01	.1127+02	-9999.
109000	070	283	-29.6	.7529+01	.1077+02	-9999.
110000	069	283	-28.8	.7218+01	.1029+02	-9999.
111000	069	281	-28.3	.6921+01	.9849+01	-9999.
112000	067	280	-27.9	.6637+01	.9426+01	-9999.
113000	065	278	-27.5	.6364+01	.9027+01	-9999.
114000	069	277	-27.2	.6104+01	.8647+01	-9999.
115000	042	276	-27.0	.5854+01	.8284+01	-9999.
116000	060	275	-26.9	.5614+01	.7942+01	-9999.
117000	059	275	-26.6	.5385+01	.7609+01	-9999.
118000	057	274	-26.1	.5165+01	.7283+01	-9999.
119000	057	272	-24.4	.4956+01	.6941+01	-9999.
120000	057	270	-22.5	.4756+01	.6610+01	-9999.
121000	055	271	-20.2	.4566+01	.6287+01	-9999.
122000	054	272	-18.7	.4385+01	.6011+01	-9999.
123000	050	272	-17.5	.4212+01	.5739+01	-9999.
124000	047	270	-17.8	.4056+01	.5518+01	-9999.
125000	047	266	-18.2	.3886+01	.5309+01	-9999.
126000	040	259	-19.0	.3732+01	.5117+01	-9999.
127000	037	253	-19.6	.3585+01	.4926+01	-9999.
128000	035	249	-19.8	.3442+01	.4733+01	-9999.
129000	033	246	-19.7	.3306+01	.4544+01	-9999.
130000	033	242	-19.5	.3174+01	.4359+01	-9999.
131000	033	240	-19.1	.3049+01	.4180+01	-9999.
132000	035	239	-18.5	.2928+01	.4006+01	-9999.
133000	037	239	-17.9	.2813+01	.3839+01	-9999.
134000	040	240	-17.2	.2702+01	.3678+01	-9999.
135000	043	243	-16.4	.2596+01	.3522+01	-9999.
136000	047	248	-15.4	.2495+01	.3372+01	-9999.
137000	050	252	-14.4	.2397+01	.3228+01	-9999.
138000	054	254	-13.0	.2305+01	.3086+01	-9999.
139000	057	256	-11.6	.2214+01	.2951+01	-9999.
140000	060	260	-10.2	.2131+01	.2823+01	-9999.
141000	062	265	-8.8	.2050+01	.2701+01	-9999.
142000	064	269	-7.9	.1972+01	.2585+01	-9999.
143000	064	272	-6.2	.1897+01	.2476+01	-9999.
144000	064	275	-4.9	.1826+01	.2371+01	-9999.
145000	062	275	-3.6	.1758+01	.2272+01	-9999.
146000	060	283	-2.5	.1692+01	.2178+01	-9999.
147000	059	287	-1.4	.1630+01	.2089+01	-9999.
148000	055	292	-0.6	.1569+01	.2006+01	-9999.
149000	052	296	-0.3	.1511+01	.1929+01	-9999.

ORIGINAL DATA  
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TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
150000	048	302	-1	.1456+01	.1056+01	-9999.
151000	045	307	-2	.1402+01	.1787+01	-9999.
152000	042	312	-2	.1351+01	.1723+01	-9999.
153000	038	318	-5	.1301+01	.1662+01	-9999.
154000	037	324	-9	.1253+01	.1603+01	-9999.
155000	035	324	-16	.1206+01	.1548+01	-9999.
156000	032	333	-22	.1162+01	.1493+01	-9999.
157000	030	339	-29	.1119+01	.1442+01	-9999.
158000	027	344	-34	.1077+01	.1391+01	-9999.
159000	023	351	-39	.1037+01	.1341+01	-9999.
160000	020	001	-44	.9982+00	.1294+01	-9999.
161000	013	018	-45	.9609+00	.1246+01	-9999.
162000	006	065	-45	.9250+00	.1199+01	-9999.
163000	008	160	-43	.8905+00	.1154+01	-9999.
164000	018	198	-49	.8572+00	.1113+01	-9999.
165000	032	218	-61	.8250+00	.1076+01	-9999.
166000	042	227	-72	.7940+00	.1040+01	-9999.
167000	047	234	-73	.7640+00	.1001+01	-9999.
168000	047	241	-68	.7352+00	.9616+00	-9999.
169000	043	243	-61	.7076+00	.9230+00	-9999.
170000	037	245	-55	.6810+00	.8864+00	-9999.
171000	032	244	-52	.6555+00	.8522+00	-9999.
172000	027	235	-55	.6310+00	.8212+00	-9999.
173000	027	215	-62	.6073+00	.7926+00	-9999.
174000	033	199	-73	.5844+00	.7659+00	-9999.
175000	043	193	-86	.5623+00	.7404+00	-9999.
176000	047	196	-95	.5410+00	.7149+00	-9999.
177000	050	202	-105	.5204+00	.6902+00	-9999.
178000	052	207	-110	.5005+00	.6652+00	-9999.
179000	055	211	-110	.4814+00	.6397+00	-9999.
180000	057	215	-107	.4630+00	.6156+00	-9999.
181000	060	214	-108	.4453+00	.5912+00	-9999.
182000	065	220	-112	.4283+00	.5696+00	-9999.
183000	070	220	-121	.4119+00	.5491+00	-9999.
184000	076	224	-131	.3961+00	.5306+00	-9999.
185000	081	230	-140	.3808+00	.5119+00	-9999.
186000	087	239	-149	.3661+00	.4936+00	-9999.
187000	092	251	-159	.3518+00	.4765+00	-9999.
188000	096	260	-169	.3381+00	.4596+00	-9999.
189000	099	264	-177	.3249+00	.4430+00	-9999.
190000	101	274	-187	.3121+00	.4272+00	-9999.
191000	103	279	-197	.2999+00	.4121+00	-9999.
192000	101	288	-206	.2880+00	.3973+00	-9999.
193000	099	287	-215	.2766+00	.3829+00	-9999.
194000	101	289	-221	.2656+00	.3686+00	-9999.
195000	103	290	-224	.2550+00	.3542+00	-9999.
196000	103	291	-224	.2448+00	.3400+00	-9999.
197000	103	297	-225	.2351+00	.3268+00	-9999.
198000	101	293	-228	.2257+00	.3140+00	-9999.
199000	099	295	-237	.2167+00	.3027+00	-9999.

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TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M <sup>3</sup> )	DEW POINT (DEG C)
200000	026	297	-24.8	.2080+00	.2938+00	-9999.
201000	026	299	-25.6	.1996+00	.2809+00	-9999.
202000	029	302	-26.3	.1915+00	.2703+00	-9999.
203000	029	303	-27.3	.1838+00	.2605+00	-9999.
204000	079	304	-28.5	.1763+00	.2510+00	-9999.
205000	074	307	-29.6	.1691+00	.2418+00	-9999.
206000	069	313	-30.6	.1621+00	.2328+00	-9999.
207000	065	320	-31.7	.1555+00	.2244+00	-9999.
208000	060	330	-32.9	.1490+00	.2160+00	-9999.
209000	059	341	-34.0	.1428+00	.2080+00	-9999.
210000	059	350	-34.6	.1369+00	.1999+00	-9999.
211000	059	359	-35.1	.1311+00	.1918+00	-9999.
212000	060	206	-35.5	.1256+00	.1841+00	-9999.
213000	062	010	-35.7	.1204+00	.1766+00	-9999.
214000	062	014	-35.9	.1153+00	.1693+00	-9999.
215000	059	024	-36.9	.1104+00	.1628+00	-9999.
216000	057	036	-38.1	.1058+00	.1568+00	-9999.
217000	059	044	-39.3	.1013+00	.1509+00	-9999.
218000	054	056	-40.6	.9690-01	.1452+00	-9999.
219000	052	065	-42.0	.9280-01	.1398+00	-9999.
220000	050	074	-43.3	.8880-01	.1346+00	-9999.
221000	045	081	-43.9	.8490-01	.1290+00	-9999.
222000	021	097	-44.4	.8130-01	.1238+00	-9999.
223000	021	136	-45.4	.7770-01	.1188+00	-9999.
224000	021	155	-46.7	.7430-01	.1143+00	-9999.
225000	021	176	-46.0	.7110-01	.1090+00	-9999.
226000	021	198	-44.5	.6790-01	.1035+00	-9999.
227000	021	215	-45.5	.6430-01	.9841-01	-9999.
228000	023	227	-46.9	.6100-01	.9391-01	-9999.
229000	023	227	-49.9	.5780-01	.9020-01	-9999.
230000	025	226	-53.1	.5470-01	.8660-01	-9999.
231000	025	240	-53.5	.5190-01	.8231-01	-9999.
232000	027	230	-54.0	.4910-01	.7805-01	-9999.
233000	027	219	-54.5	.4660-01	.7425-01	-9999.
234000	027	208	-55.0	.4410-01	.7042-01	-9999.
235000	028	198	-55.0	.4180-01	.6675-01	-9999.
236000	030	187	-54.2	.3990-01	.6347-01	-9999.
237000	033	178	-53.0	.3810-01	.6028-01	-9999.
238000	035	171	-52.2	.3640-01	.5738-01	-9999.
239000	038	164	-51.2	.3480-01	.5461-01	-9999.
240000	042	159	-50.2	.3320-01	.5186-01	-9999.
241000	045	155	-50.2	.3170-01	.4952-01	-9999.
242000	050	151	-50.2	.3030-01	.4733-01	-9999.
243000	054	149	-50.5	.2900-01	.4537-01	-9999.
244000	057	146	-52.0	.2770-01	.4364-01	-9999.
245000	062	145	-53.5	.2640-01	.4188-01	-9999.
246000	067	144	-55.0	.2520-01	.4024-01	-9999.
247000	070	143	-56.2	.2410-01	.3869-01	-9999.
248000	076	142	-58.1	.2300-01	.3726-01	-9999.
249000	081	143	-59.2	.2100-01	.3565-01	-9999.

OF FOUR CORNERS

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
250000	147	143	-59.2	.2090-01	.3402-01	-9999.
251000	142	143	-59.7	.1990-01	.3247-01	-9999.
252000	149	144	-61.2	.1900-01	.3122-01	-9999.
253000	104	145	-61.7	.1810-01	.2982-01	-9999.
254000	111	145	-62.3	.1720-01	.2841-01	-9999.
255000	116	146	-63.2	.1640-01	.2721-01	-9999.
256000	123	147	-64.2	.1570-01	.2617-01	-9999.
257000	128	148	-64.8	.1490-01	.2492-01	-9999.
258000	133	148	-65.2	.1420-01	.2378-01	-9999.
259000	138	149	-66.2	.1350-01	.2272-01	-9999.
260000	143	149	-66.4	.1290-01	.2174-01	-9999.
261000	144	150	-67.2	.1230-01	.2080-01	-9999.
262000	152	151	-68.2	.1170-01	.1988-01	-9999.
263000	155	151	-68.9	.1110-01	.1893-01	-9999.
264000	158	151	-69.5	.1060-01	.1813-01	-9999.
265000	162	152	-70.2	.1010-01	.1733-01	-9999.
266000	165	152	-71.5	.9600-02	.1659-01	-9999.
267000	167	152	-72.2	.9100-02	.1577-01	-9999.
268000	168	153	-73.2	.8600-02	.1498-01	-9999.
269000	168	153	-74.1	.8200-02	.1435-01	-9999.
270000	168	153	-74.6	.7800-02	.1369-01	-9999.
271000	168	153	-75.2	.7400-02	.1302-01	-9999.
272000	169	153	-75.7	.7100-02	.1253-01	-9999.
273000	167	153	-76.2	.6700-02	.1185-01	-9999.
274000	163	153	-77.2	.6400-02	.1138-01	-9999.
275000	160	153	-78.2	.6000-02	.1072-01	-9999.
276000	157	153	-78.2	.5700-02	.1018-01	-9999.
277000	152	153	-79.2	.5500-02	.9876-02	-9999.
278000	145	152	-79.2	.5200-02	.9338-02	-9999.
279000	138	152	-79.2	.4900-02	.8799-02	-9999.
280000	126	152	-79.2	.4700-02	.8440-02	-9999.
281000	120	151	-79.3	.4448-02	.8024-02	-9999.
282000	111	149	-79.5	.4248-02	.7628-02	-9999.
283000	103	148	-79.7	.4038-02	.7252-02	-9999.
284000	95	147	-79.9	.3839-02	.6894-02	-9999.
285000	87	145	-80.1	.3650-02	.6558-02	-9999.
286000	79	142	-80.3	.3470-02	.6231-02	-9999.
287000	71	140	-80.5	.3299-02	.5923-02	-9999.
288000	63	136	-80.6	.3136-02	.5631-02	-9999.
289000	56	132	-80.8	.2981-02	.5354-02	-9999.
290000	49	126	-81.0	.2834-02	.5090-02	-9999.
291000	42	119	-81.2	.2695-02	.4839-02	-9999.
292000	37	109	-81.4	.2562-02	.4600-02	-9999.
293000	33	97	-81.6	.2435-02	.4373-02	-9999.
294000	31	82	-81.8	.2315-02	.4157-02	-9999.
295000	31	66	-81.9	.2201-02	.3952-02	-9999.
296000	24	63	-82.9	.1827-02	.3333-02	-9999.
301000	14	52	-83.2	.1550-02	.2827-02	-9999.
304000	6	34	-83.6	.1315-02	.2398-02	-9999.
307000	22	27	-83.9	.1115-02	.2034-02	-9999.

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TABLE 5. (Concluded)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
310000	047	271	-84.3	.9459-03	.1725-02	-9999.
313000	066	269	-83.9	.8034-03	.1459-02	-9999.
316000	066	269	-82.6	.6835-03	.1228-02	-9999.
319000	064	269	-81.3	.5814-03	.1034-02	-9999.
322000	058	269	-80.0	.4946-03	.8710-03	-9999.
325000	048	269	-78.7	.4207-03	.7334-03	-9999.
328000	032	269	-77.4	.3578-03	.6176-03	-9999.
331000	035	269	-73.4	.1072-03	.5182-03	-9999.
334000	038	269	-69.4	.2636-03	.4348-03	-9999.
337000	041	269	-65.3	.2262-03	.3648-03	-9999.
340000	044	268	-61.3	.1940-03	.3061-03	-9999.
343000	047	268	-57.2	.1663-03	.2568-03	-9999.
346000	049	268	-51.7	.1445-03	.2171-03	-9999.
349000	049	268	-44.8	.1272-03	.1847-03	-9999.
352000	049	267	-37.8	.1119-03	.1572-03	-9999.
355000	046	267	-30.9	.9828-04	.1338-03	-9999.
358000	041	265	-24.0	.8627-04	.1139-03	-9999.
361000	034	265	-17.0	.7576-04	.9701-04	-9999.
364000	034	264	-7.8	.6845-04	.8439-04	-9999.
367000	033	263	1.3	.6177-04	.7340-04	-9999.
370000	031	261	10.5	.5568-04	.6385-04	-9999.
373000	028	258	19.6	.5014-04	.5554-04	-9999.
376000	024	252	28.8	.4510-04	.4831-04	-9999.
379000	021	255	38.6	.4092-04	.4233-04	-9999.
382000	022	254	49.2	.3747-04	.3739-04	-9999.
385000	023	253	60.1	.3443-04	.3313-04	-9999.
388000	024	252	71.4	.3173-04	.2945-04	-9999.
391000	025	250	82.9	.2932-04	.2627-04	-9999.
394000	026	250	94.6	.2717-04	.2350-04	-9999.
397000	027	249	106.5	.2524-04	.2109-04	-9999.
400000	028	248	118.6	.2351-04	.1899-04	-9999.

TABLE 6. STS-6 SRB DESCENT-IMPACT SURFACE SHIP OBSERVATIONS

Site: USN Slip Redstone

Location: 29°N Latitude  
78°W Longitude

Date: April 4, 1983

Time: 1830 UT

Surface Observation:

<u>Air Temp. °F</u>	<u>Wet-Bulb °F</u>	<u>Dew Point °F</u>	<u>Pressure (MSL) mb</u>	<u>Wind Direction</u>	<u>Wind Speed Kt.</u>
70.0	59.5	52	1019.5 (28' station press = 1018.5 mb)	070°	10

Sky Observation:

<u>Clouds</u>	<u>Total Sky Cover</u>	<u>Total Opaque Sky</u>	<u>Visibility (miles)</u>
Clear Skys (Contrails)	0/10	0/10	8

Sea Observation:

<u>Sea Condition:</u>	<u>Wind Waves</u>	<u>Swell Conditions</u>
Sea Smooth (wavelets)—Code 2	Freq. Ht.	Dir. from
0/10 Breaking Waves	Sec. m.	which Swell
0/10 Foam	1 1/2	is coming
Surface Sea Water Temp. = 23.9°C (75.0°F)		100°
		4
		Ht. m.
		1

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TABLE 7. SELECTED ATMOSPHERIC OBSERVATIONS FOR THE FLIGHT TESTS OF THE SPACE SHUTTLE VEHICLES

Vehicle Data					Surface Observations				Inflight Conditions Max. Wind Below 60,000 ft			Count Down and Launch Comments of Meteorological Significance	
Seq. No.	Vehicle No.	Launch Date	Time <sup>c</sup> (EST) Nearest Minute	Launch Pad	Thermodynamic <sup>a</sup>		Wind <sup>b</sup>		Alt. (ft)	Speed (ft/sec)	Dir. (deg)		
					Press <sup>d</sup> N/cm <sup>2</sup>	Temp. (°C)	Rel. Hum. (%)	Speed (ft/sec)	Dir. (deg)				
1	STS-1	4/12/81	0700	39A	10.234 <sup>e</sup>	21	82	11.8 15.2	125 120	44,300	98	250	Wind directional change observed at Pad just prior to L+0.8
2	STS-2	11/12/81	1010	39A	10.166	23	61	27.0 27.0	345 355	36,300	158	286	
3	STS-3	3/22/82	1100	39A	10.160	24	71	7.0 <sup>f</sup> 8.0 <sup>f</sup>	50 <sup>f</sup> 145 <sup>f</sup>	45,000	119	250	
4	STS-4	6/27/82	1100 <sup>h</sup>	39A	10.200	29	70	5.8 <sup>i</sup> 4.9 <sup>i</sup>	133 <sup>i</sup> 141 <sup>i</sup>	47,900	37	329	
5	STS-5	11/11/82	0719	39A	10.227	22	68	22.0 35.0	90 90	40,600	146	336	
6	STS-6	4/4/83	1330	39A	10.183	23	55	12.7 16.4	63 55	46,100	155	277	

a. Pad 39A thermodynamic measurements taken at approximately 1.2 m (4 ft) above natural grade at camera site No. 3.

b. 1 min average prior to L+0 of 60 ft PLP (listed first) and 275 ft FSS winds measured above natural grade.

c. Eastern Standard Time unless otherwise noted.

d. Pressure measurement applicable to 21 ft above MSL unless otherwise indicated.

e. Pressure measurement applicable to 14 ft above MSL.

f. 10 sec average prior to L+0.

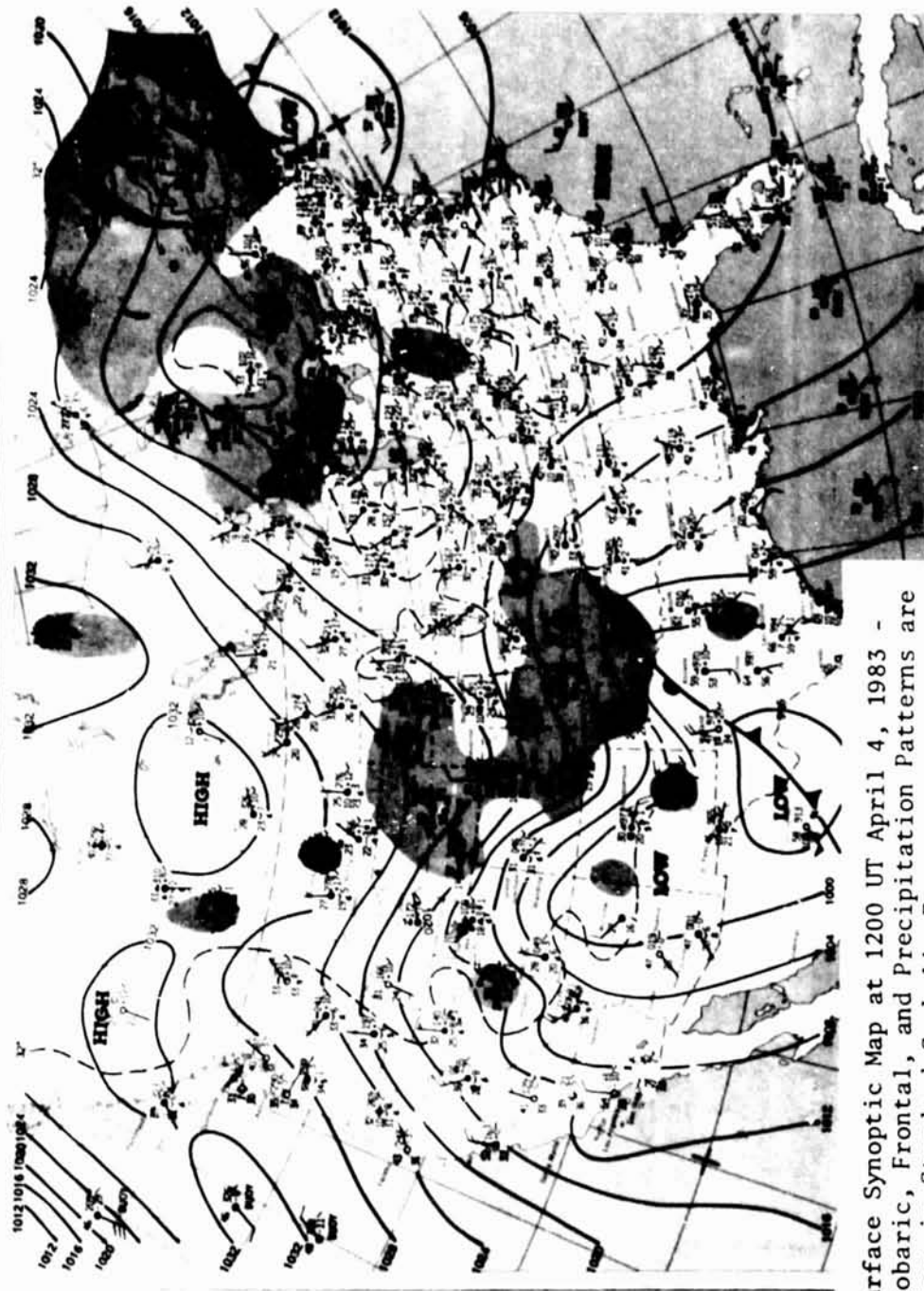
g. Due to onset of sea breeze.

h. Eastern Daylight Time.

i. 30 sec average prior to L+0.

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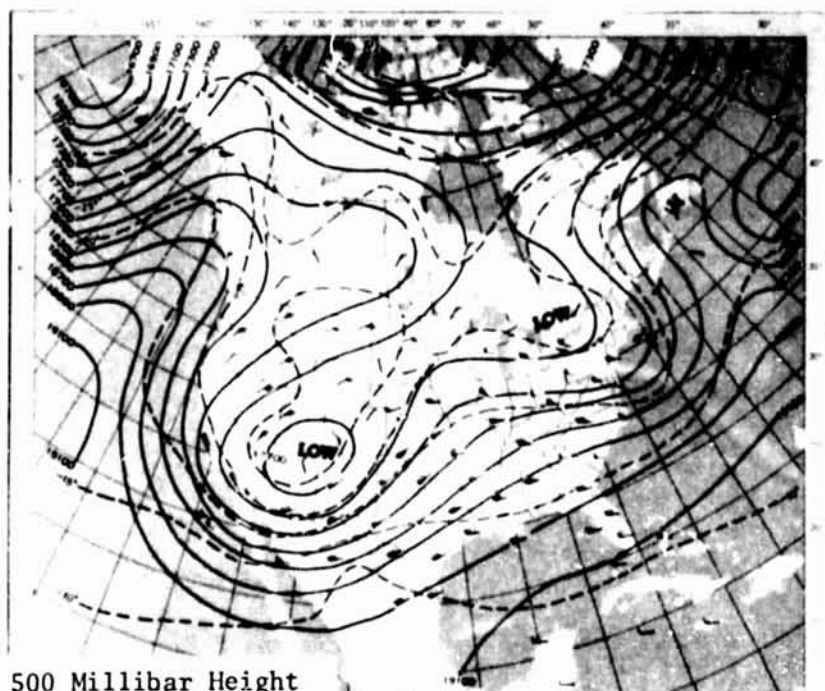
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Surface Synoptic Map at 1200 UT April 4, 1983 -  
Isobaric, Frontal, and Precipitation Patterns are  
Shown in Standard Symbolic Form.

Figure 1. Surface synoptic chart 6 hr 30 min prior to launch of STS-6.

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500 Millibar Height  
Contours at 1200 UT  
April 4, 1983.

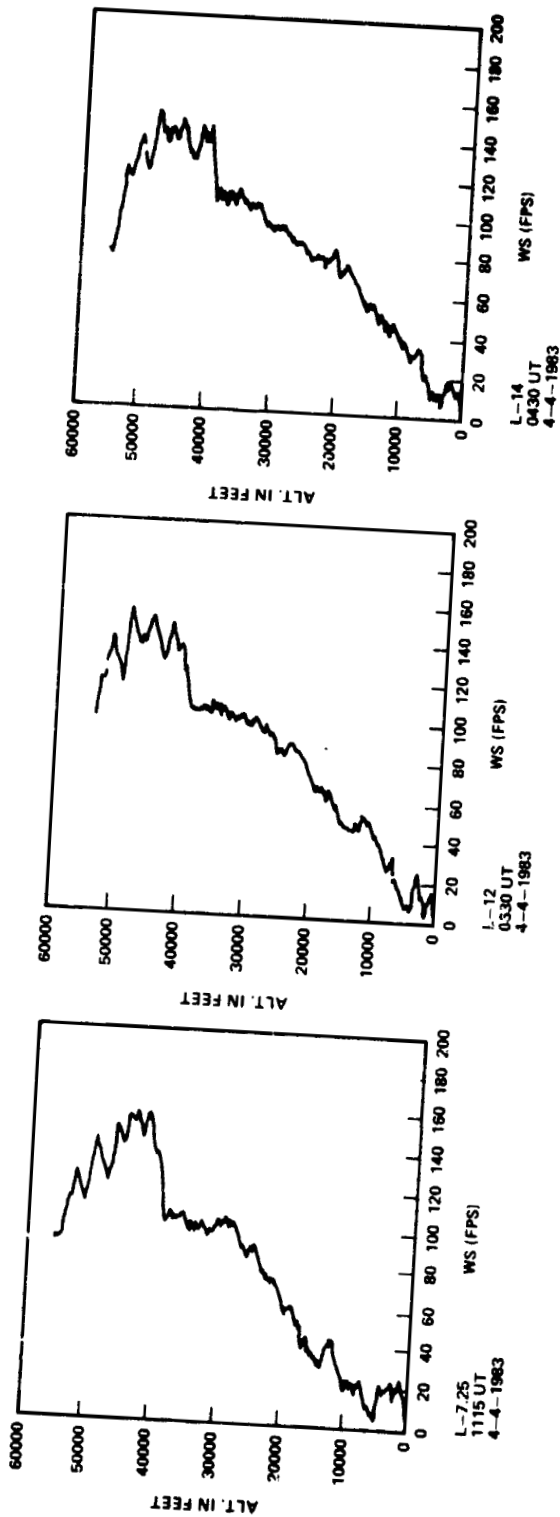
Continuous Lines Indicate Height Contours In Feet  
Above Sea Level. Dashed Lines are Isotherms in  
Degrees Centigrade. Arrows Show Wind Direction  
and Speed at the 500 MB Level.

Figure 2. 500 mb map 6 hr 30 min prior to launch of STS-6.

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Figure 3. Goes-5 visible imagery of cloud cover taken at launch of STS-6 (1830 UT, April 4, 1983). 500-mb contours and wind barbs are also included for 1200 UT.



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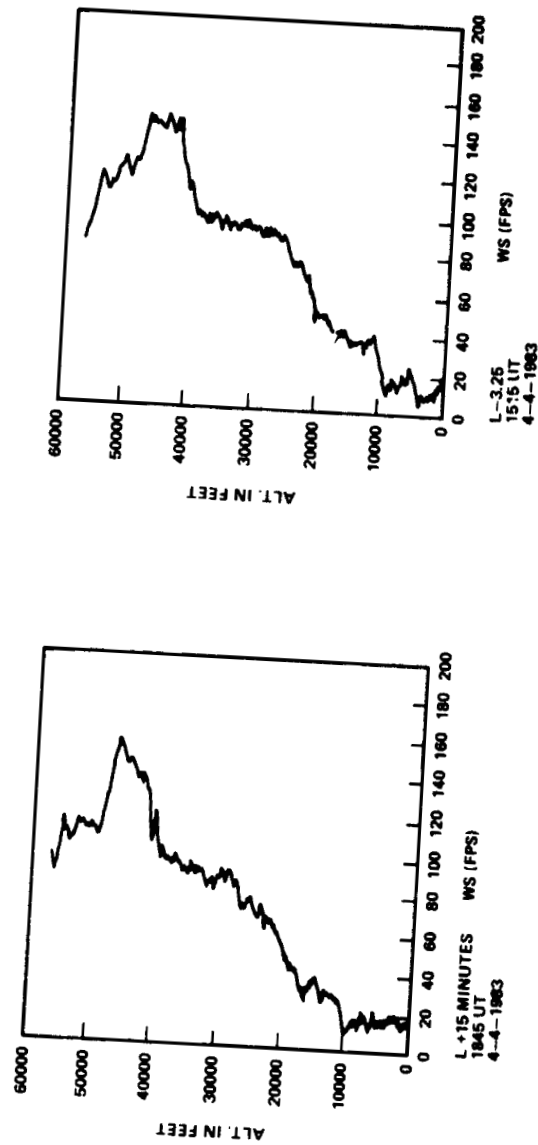


Figure 4. Enlarged view of GOES-5 visible imagery of cloud cover with exhaust trail visible (indicated by arrow), taken at launch of STS-6 (1830 UT, April 4, 1983). Surface temperatures and wind barbs for 1800 UT are also included.

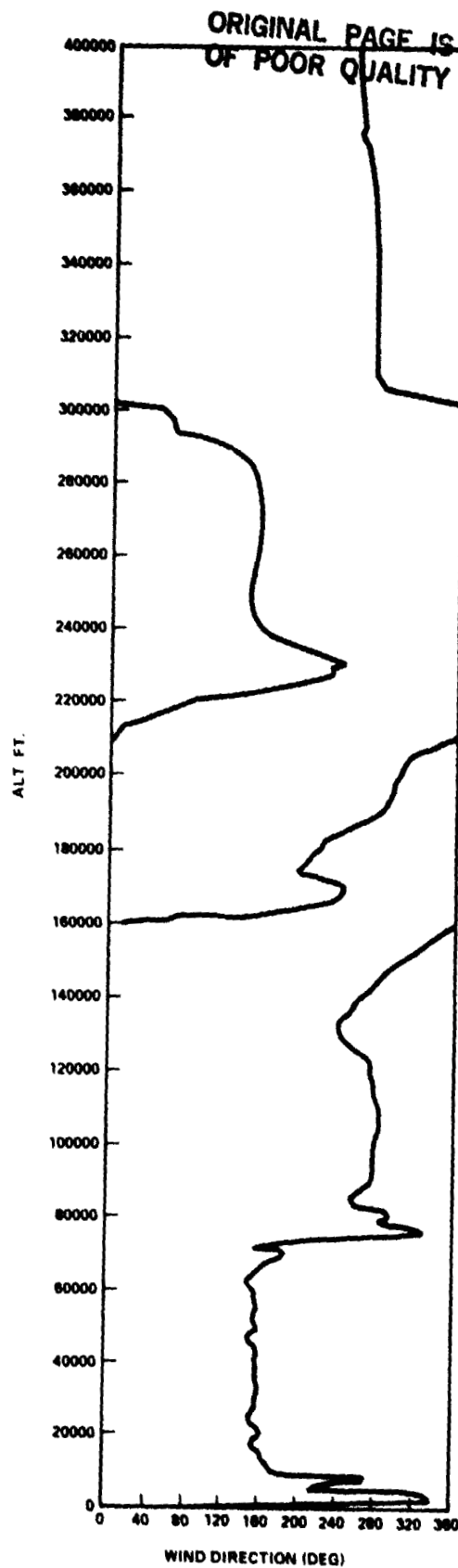
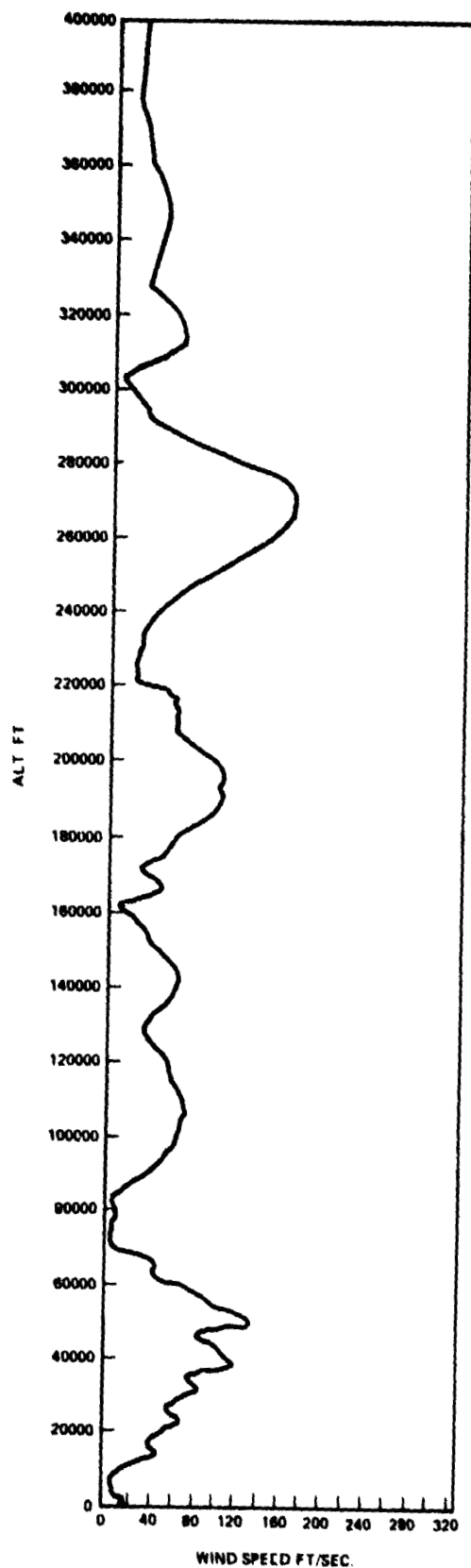


Figure 5. Scalar wind speed and direction at launch time of STS-6.

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Figure 6. STS-6 prelaunch/launch Jimsphere-measured wind speeds (FPS).

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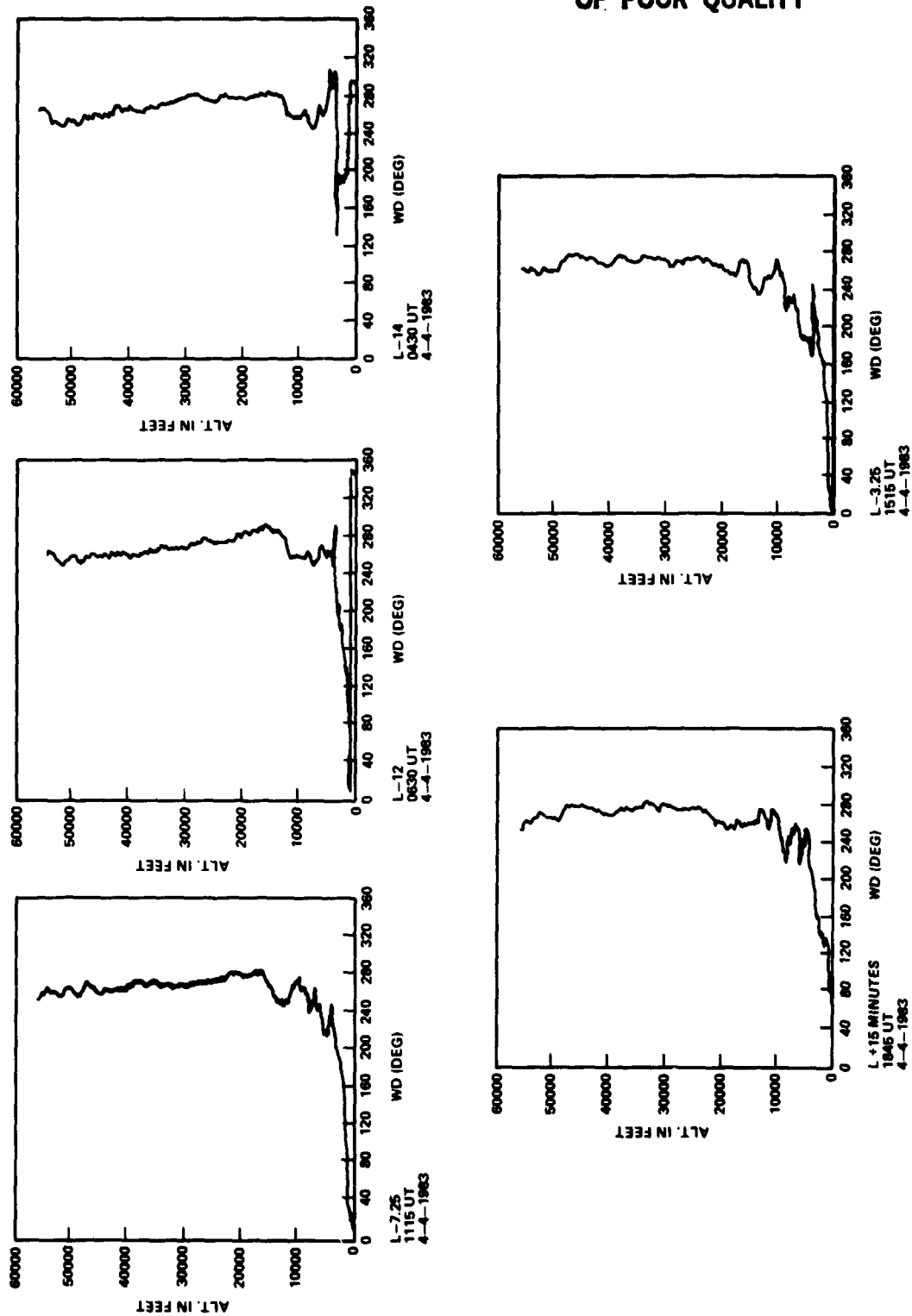


Figure 7. STS-6 prelaunch/launch Jimsphere-measured wind directions (degrees).

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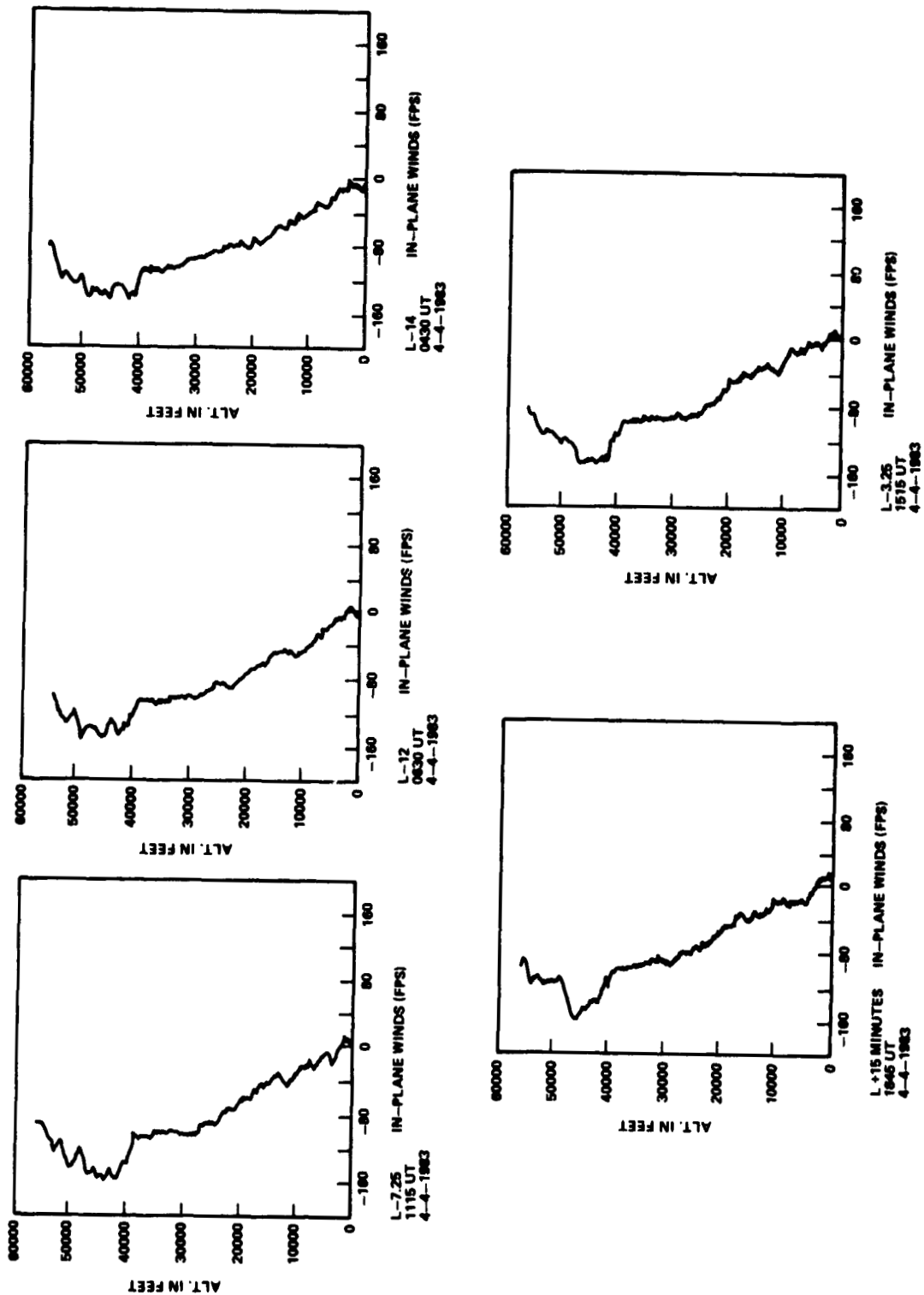


Figure 8. STS-6 prelaunch/launch Jimsphere-measured in-plane component winds (FPS). Flight azimuth = 90 degrees.

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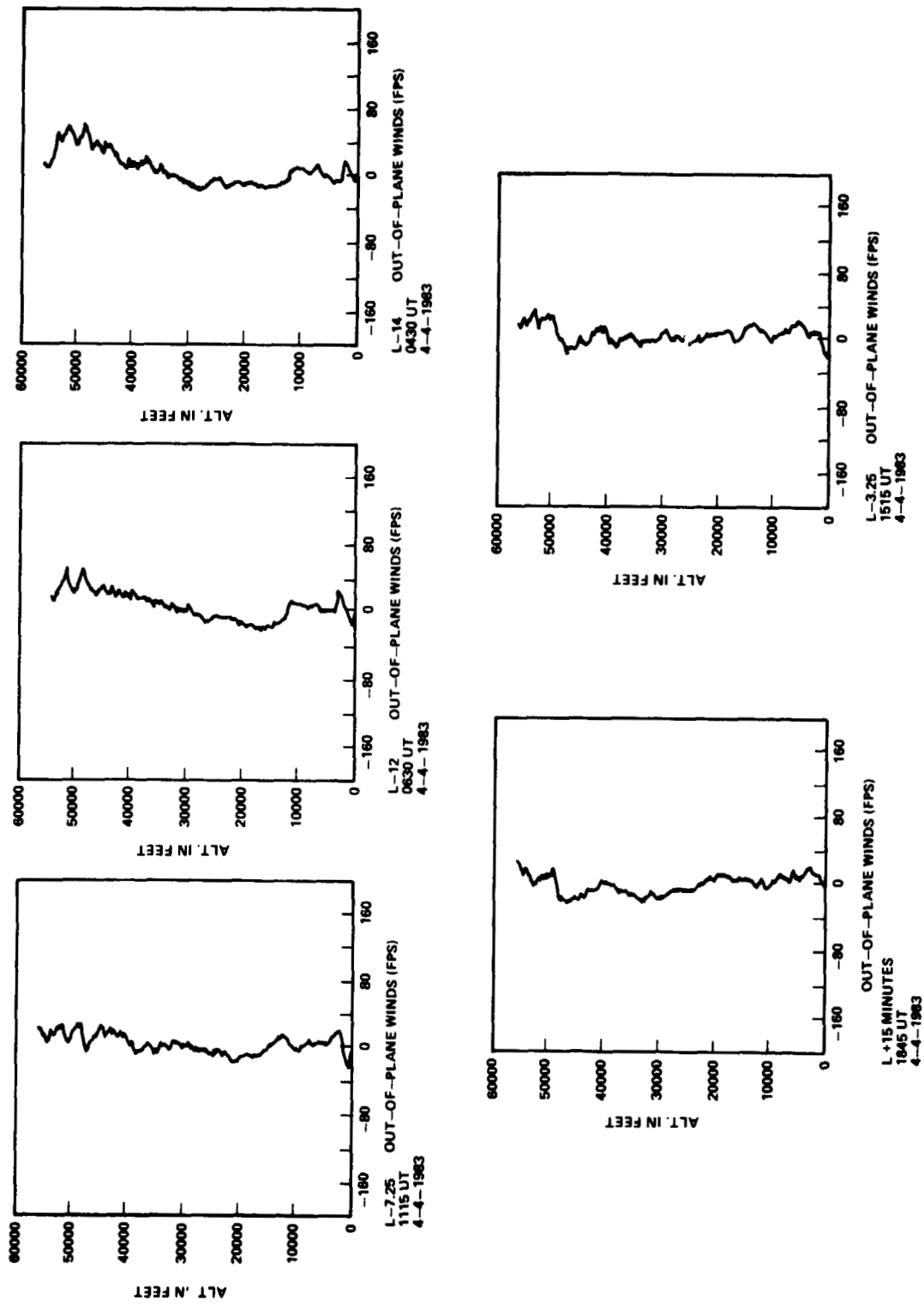
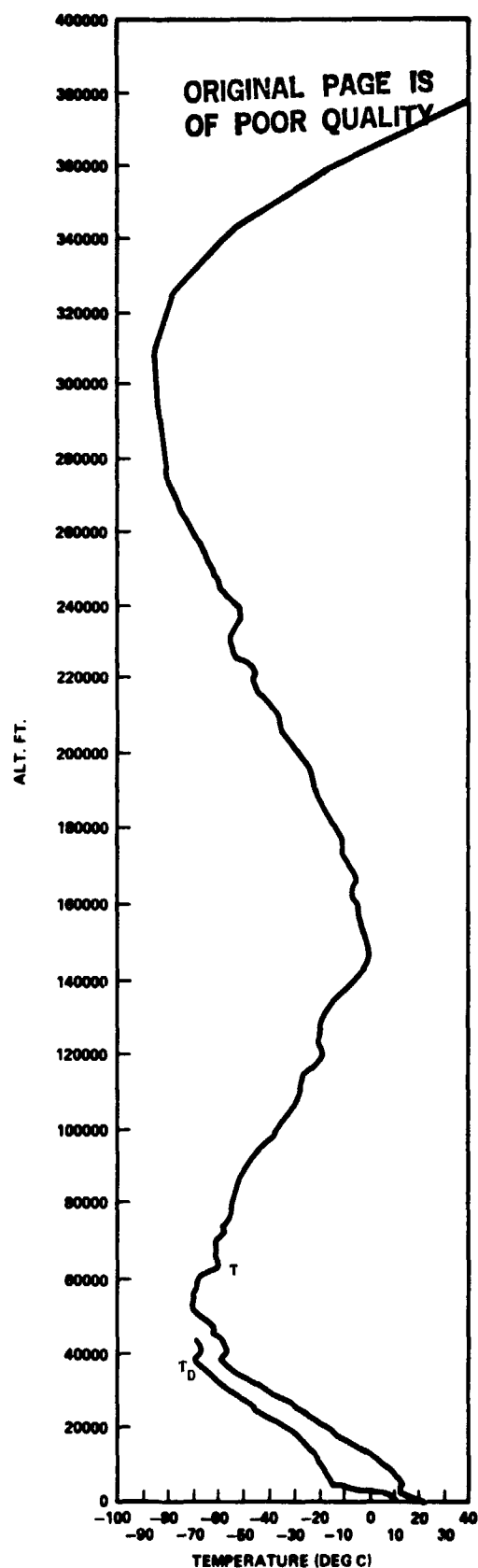
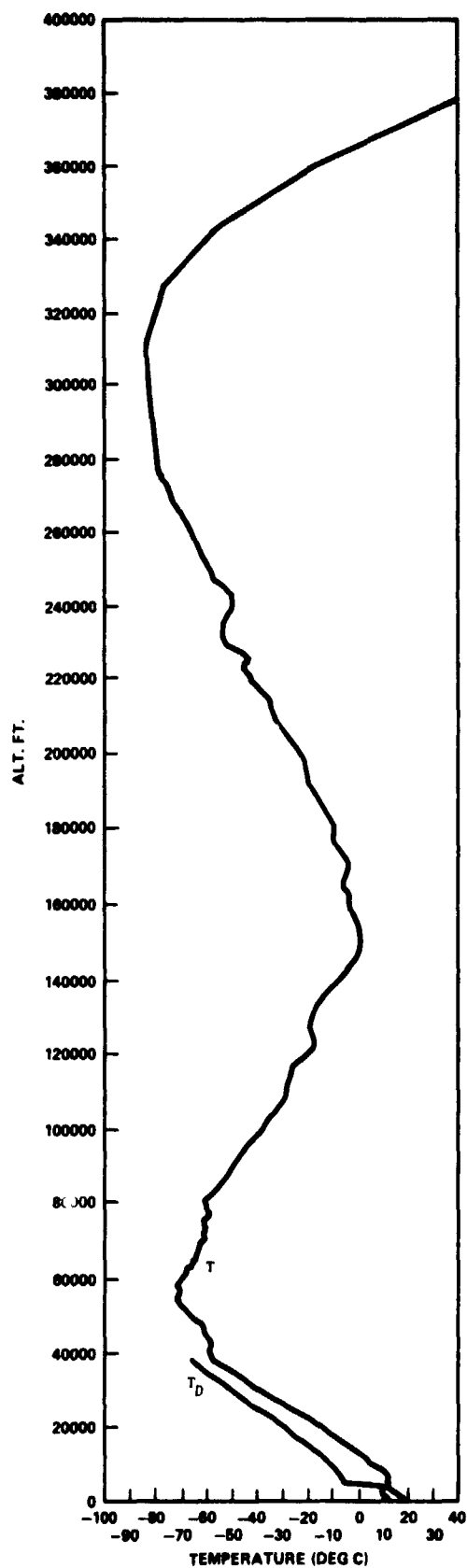


Figure 9. STS-6 prelaunch/launch Jimsphere-measured out-of-plane component winds (FPS). Flight azimuth = 90 degrees.



T - TEMPERATURE  
 $T_D$  - DEW POINT TEMPERATURE

Figure 10. STS-6 temperature profiles versus altitude for launch (left) and SRB descent (right).

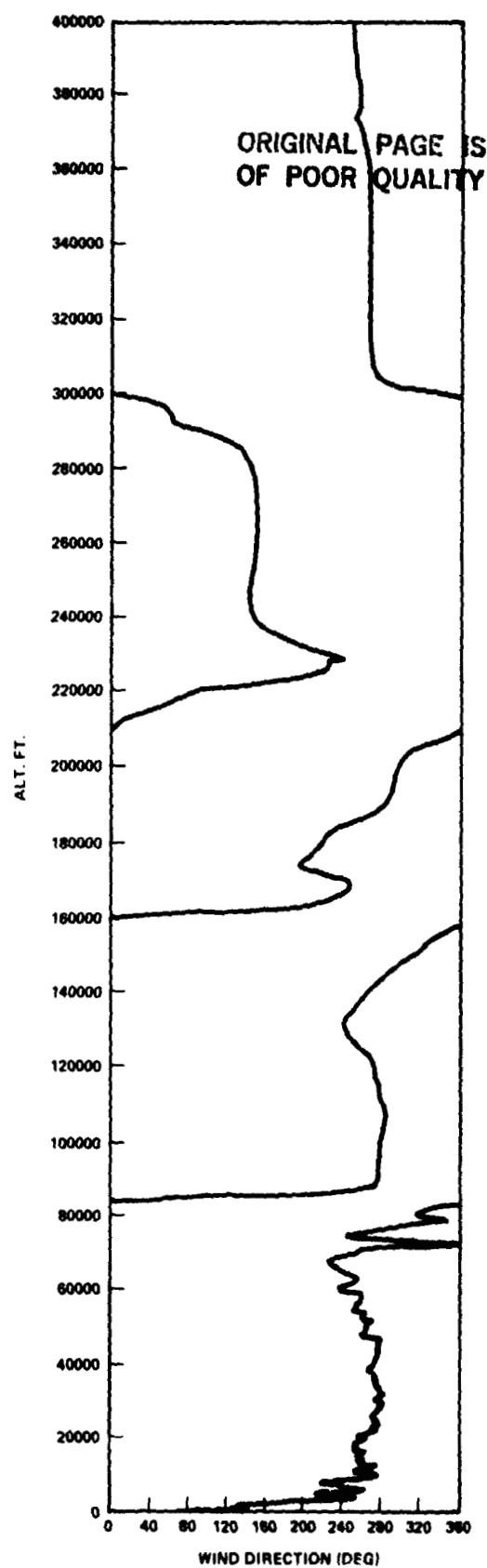
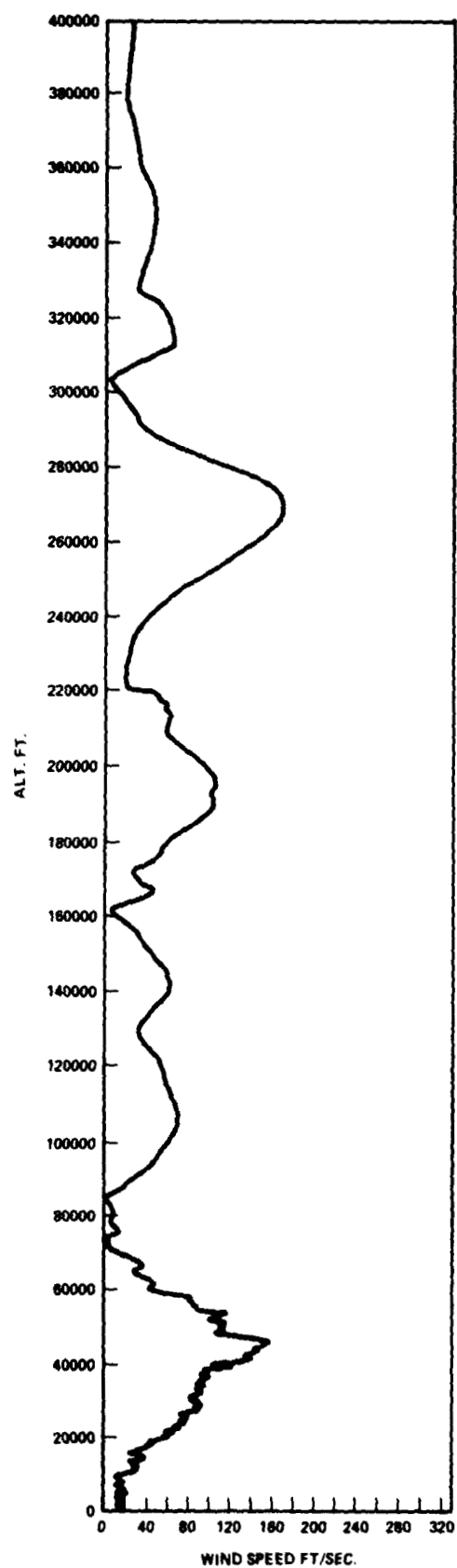


Figure 11. STS-6 scalar wind speed and direction for SRB descent.

## REFERENCES

1. Saturn Flight Evaluation Working Group: Saturn Launch Vehicle Flight Evaluation Report – Appendix A – Atmosphere (A separate report is prepared for each Saturn vehicle launch operation). George C. Marshall Space Flight Center, Alabama.
2. Johnson, D. L.: Summary of Atmospheric Data Observations for 155 Flights of MSFC/ABMA Related Aerospace Vehicles. NASA TMX-64796, December 5, 1973.
3. Johnson, D. L.: Atmospheric Environment for ASTP (SA-210) Launch. NASA TM X-64990, February 1976.
4. Johnson, D. L., Jasper, G., and Brown, S. C.: Atmospheric Environment for Space Shuttle (STS-1) Launch. NASA TM 82436, July 1981.
5. Johnson, D. L. and Brown, S. C.: Atmospheric Environment for Space Shuttle (STS-2) Launch. NASA TM 82463, December 1981.
6. Johnson, D. L., Brown, S. C., and Batts, G. W.: Atmospheric Environment for Space Shuttle (STS-3) Launch. NASA TM 82480, April 1982.
7. Johnson, D. L., Hill, C. K., and Batts, G. W.: Atmospheric Environment for Space Shuttle (STS-4) Launch. NASA TM 82498, July 1982.
8. Johnson, D. L., Hill, C. K., and Batts, G. W.: Atmospheric Environment for Space Shuttle (STS-5) Launch. NASA TM 82515, March 1983.
9. Justus, C. G., et al.: The NASA/MSFC Global Reference Atmosphere Model – Mod 3 (with Spherical Harmonic Wind Model). NASA CR-3256, March 1980.
10. Smith, O. E. and Weidner, D. K.: A Reference Atmosphere for Patrick AFB, Florida, Annual (1963 Revision). NASA TM X-53139, September 23, 1964.